CVM UNIVERSITY
(Established under Gujarat Private Universities (Second Amendment) Act : 2019 Gujarat Act No. 20 of 2019)

FACULTY OF ENGINEERING & TECHNOLOGY

First Year Master of Engineering

Semester II

Course Code: 102430207

Course Title: Python Programming

Type of Course: Program Elective IV

Course Objectives: In this age, every Electronics, Electrical and Computer engineers must learn Python Programming to build applications in their core domain. Python is becoming popular in artificial intelligence and machine learning.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Internal		External		Total
Lecture	Tutorial	Practical		Theory	J/V/P*	Theory	J/V/P*	
0	0	8	4	NA	50 /25	NA	50 /25	100 / 50

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	Introduction, Data Types and Operators: Installation and working with Python, Variables and data types in python, Perform computations and create logical statements using Python's operators: Arithmetic, Assignment, Comparison, Logical, Membership, Identity, Bitwise operators, list, tuple and string operations	08
2	Python Decision making and Loops: Write conditional statements using If statement, if ...else statement, else if statement and Boolean expressions, While loop, For loop, Nested Loop, Infinite loop, Break statement, Continue statement, Pass statement, Use for and while loops along with useful built-in functions to iterate over and manipulate lists, sets, and dictionaries. Plotting data, Programs using decision making and loops.	08
3	Python Functions and Modules: Defining custom functions, Organizing Python codes using functions, Create and reference variables using the appropriate scope, Basic skills for working with lists, tuples, work with dates and times, get started with dictionaries, Importing own module as well as external modules, Programming using functions, modules and external packages	07
4	Python File Operations: An introduction to file I/O, use text files, use CSV files, use binary files, Handle a single exception, handle multiple exceptions, Illustrative programs, Exercises	08
5	Applications of Signal an Image Processing using Python, Implementation of Machine learning algorithms using Python	08

Reference Books:

1	John V Guttag. "Introduction to Computation and Programming Using Python", Prentice Hall of India
2	Kenneth A. Lambert, "Fundamentals of Python – First Programs", CENGAGE Publication
3	Introduction to Python for Engineers and Scientists, By. Sandeep Nagar, Apress

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	To test and debug code written in python	**25**
CO-2	To create applications using Python Programming	**25**
CO-3	To perform file operations to read and write data in files	**25**
CO-4	To learn application of Python programming for signal and image processing.	**25**

List of Practical / Tutorials:

1	Write Python programs to understand control structures
2	Write Python programs to understand list and tuples
3	Use conditional statements and loops in Python programs
4	Write python programs to create functions and use functions in the program
5	Import module and use it in Python programs
6	Write python program to plot data using PyPlot
7	Python program for signal processing applications
8	Python program for image processing applications
9	Python program for machine learning applications
10	Implementation of deep learning based algorithm

Supplementary learning Material:	
1	NPTEL Video lecture on Python Programming

Curriculum Revision:	
Version:	**1**
Drafted on (Month-Year):	Apr-20
Last Reviewed on (Month-Year):	Jul-20
Next Review on (Month-Year):	Apr-22