CENTRAL UNIVERSITY OF KERALA DEPARTMENT OF COMPUTER SCIENCE M.Sc. COMPUTER SCIENCE – PROGRAMME STRUCTURE					
COURSE CODE	COURSE TITLE	CONTACT HRS/WEEK			CREDITS
		LEC	LAB	TUT	
SEMESTER I					
CSC5102	Programming Concepts Using Python	2	2	1	4

This is a problem solving and **employability based skill development course**.

Course Objective:
The objective of the course is to provide theoretical and practical aspects of programming concepts using python.

By completing this course, students will obtain the following course/learning outcomes:

1. Knowledge to be gained:
   (i) Interpret the fundamental Python syntax and semantics and be fluent in the use of Python Control flow statements.
   (ii) Express proficiency in the handling of strings and functions.
   (iii) Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.
   (iv) Identify the commonly used operations involving file systems and Exception Handling.
   (v) Articulate the Object-Oriented Programming concepts such as encapsulation, inheritance and polymorphism as used in Python.
2. Skill to be gained:
   (vi) Problem solving and programming capability using python
3. Competency to be gained:
   (i) Design and implement a program using python to solve a real world problem

Prerequisites: Basic knowledge in any programming languages/concepts

Grading:

Lab implementation	– 30%
Assignment/Quiz/presentation	– 5%
Class Test	– 5%
Final Exam	– 60%

CSC5102 - Programming Concepts using Python

Module 1
Introduction to Python, Basic Syntax, Variables, Data Types, Operators, Understanding python blocks. Conditional Statements, Looping, and Control Statements.

Module 2
Introduction to Files, Processing files and records, Exceptions, Functions. Local Variables, Global Variables and Global Constants. Generating Random Numbers. The math Module, Storing Functions in Modules.

Module 3
Strings and Number System, String Methods, Basic String Operations, String Slicing, Testing, Searching, and Manipulating Strings. Introduction to Lists, List slicing, Copying Lists, Processing Lists, List Methods and Useful Built-in Functions.

Module 4
Classes and Objects, Classes and Functions, Classes and Methods, Working with Instances, Constructor, class attributes and destructors, Inheritance and Polymorphism.

Module 5
Any one case study based on Machine Learning, IoT, Data Analysis and Visualization, Web development, Robot programming, Multithreading and Networking concepts

Text Books:

1. Kenneth A. Lambert, The Fundamentals of Python: First Programs, Cengage Learning, 2011.
2. Think Python Second Edition, by Allen B. Downey, Orielly publishing, 2015

Reference:

3. Introduction to Computation and Programming Using Python. John V. Guttag, The MIT Press,2016.
4. James Payne, Beginning Python using Python 2.6 and Python 3, Wrox publishing, 2010.
5. Paul Gries, Practical Programming: An Introduction to Computer Science using Python the Pragmatic Bookshelf, 2nd edition 2013.
6. Charles Dierach, Introduction to Computer Science using Python, Wiley, 2015.