

CERTIFIED PYTHON PROGRAMMING

Detailed Curriculum

Name of Unit of Qualification	:	Introduction to Python
Duration	:	6 Hours
Topics	:	Python Introduction

Performance Criteria (OUTCOME) No.	Contents	Hrs.
<ol style="list-style-type: none"> Understand features of Python that make it one the most popular languages in the industry. Understand structure of Python program. Understand the areas where Python is used. 	Technical Strength of Python, Introduction to Python Interpreter and program execution, Using Comments, Literals, Constants, Python's Built-in Data types, Numbers (Integers, Floats, Complex Numbers, Real, Sets), Strings (Slicing, Indexing, Concatenation, other operations on Strings), Accepting input from Console, printing statements, Simple 'Python' programs.	6

Name of Unit of Qualification	:	Operators, Expressions and Python Statements
Duration	:	18 Hours
Topics	:	Operators, Conditional Statement, Loops

Performance Criteria (OUTCOME) No.	Contents	Hrs.
<ol style="list-style-type: none"> Use the basic operators and expressions available in Python in developing Program. Understand and use various Python statements like conditional constructs, looping constructs in writing Python program. 	Assignment statement, expressions, Arithmetic, Relational, Logical, Bitwise operators and their precedence, Conditional statements: if, if-else, if-elif-else; simple programs, Notion of iterative computation and control flow – range function, While Statement, For loop, break statement, Continue Statement, Pass statement, else, assert.	18

Name of Unit of Qualification	:	Sequence Data Types
Duration	:	18 Hours
Topics	:	Lists, tuples, set and dictionary.

Performance Criteria (OUTCOME) No.	Contents	Hrs.
1. Work with various built-in Sequence datatypes and their use. 2. Understand the concept of mutable and immutable objects.	Lists, tuples and dictionary, (Slicing, Indexing, Concatenation, other operations on Sequence datatype), concept of mutability, Examples to include finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary.	18

Name of Unit of Qualification	:	Functions
Duration	:	10 Hours
Topics	:	Library functions, User Define functions, Function parameters.

Performance Criteria (OUTCOME) No.	Contents	Hrs.
1. Apply the in-built functions available in Python in solving different problems. 2. Work with modular approach using user defined functions.	Modular programming and functions, Function parameters, Local variables, the Return statement, DocStrings, global statement, Default argument values, keyword arguments, VarArgs parameters. Library function-input(), eval(), print(), String Functions: count(), find(), rfind(), capitalize(), title(), lower(), upper(), swapcase(), islower(), isupper(), istitle(), replace(), strip(), lstrip(), rstrip(), split(), partition(), join(), isspace(), isalpha(), isdigit(), isalnum(), startswith(), endswith(), encode(), decode(), String: Slicing, Membership, Pattern Matching, Numeric Functions: eval(), max(), min(), pow(), round(), int(), random(), ceil(), floor(), sqrt(), Date & Time Functions, Recursion.	10

Name of Unit of Qualification	:	File Processing
Duration	:	10 Hours

Topics	:	Opening File, Reading from & Writing to File and File functions
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Performance Criteria (OUTCOME) No.	Contents	Hrs.
1. Work with files and reading/writing onto files.	Concept of Files, File opening in various modes and closing of a file, Reading from a file, Writing onto a file, File functions-open(), close(), read(), readline(),readlines(),write(), ritelines(),tell(),seek(), Command Line arguments.	10

Name of Unit of Qualification	:	Scope and Modules
Duration	:	8 Hours
Topics	:	Scope and Modules

Performance Criteria (OUTCOME) No.	Contents	Hrs.
1. Understanding the concept of Scope of Objects. 2. Understand the concept of modules and importing, loading and reloading of modules in programs.	Scope of objects and Names, LEGB Rule Module Basics, Module Files as Namespaces, Import Model, Reloading Modules.	8

Name of Unit of Qualification	:	NumPy Basics
Duration	:	10 Hours
Topics	:	NumPy and its functionalities

Performance Criteria (OUTCOME) No.	Contents	Hrs.
1. work on NumPy array manipulation to access data and subarrays and to split, reshape, join arrays etc.	Introduction to NumPy, Creating Array, Array Indexing, Array Slicing, Data Types, Array Shape, Array Reshape, Array Iterating, Array Join, Array Search, Array Sort, Array Filter.	10