

CSCS 405 : Problem Solving Using Python

UNIT I

Foundation: Computer hardware architecture, Understanding programming, The Way of the Program, The building blocks of programs, Writing a program, Variables, Variable names and keywords, Expressions and Statements, Operators and operands, String operations, Functions, Built-in functions, Type conversion functions, Conditionals and Recursion, Chained conditionals, Catching exceptions using try and except, Iteration, break & continue, Loop patterns. (12 hours)

UNIT II

Data Processing : Strings, String slices, String len functions, Looping and counting with strings, string methods, Format operator, Lists, List operations, Lists and functions, Lists and strings, Dictionaries, Dictionaries and files, Looping and dictionaries, Tuples, Tuple assignment, Using tuples as keys in dictionaries, Files, Text files and lines, Using try, except, and open. (12 hours)

UNIT III

Object Orientation : Managing Larger Programs, Classes as Types, Object Lifecycle, Our First Python Object, Fruitful Functions & void functions, Classes and Functions, Subdividing a Problem-Encapsulation, Many Instances, Classes and Methods, Inheritance, Debugging, Syntax errors, Runtime errors, Semantic errors. (12 hours)

Text Books:

- (1). “Think Python: How to Think Like a Computer Scientist”, Allen B. Downey, Second Edition, Green Tea Press, 2015.
- (2). “Python for Everybody: Exploring Data Using Python 3”, Charles R. Severance, 1st Edition, CreateSpace Independent Publishing Platform, 2016.
- (3). “ Learning Python for Forensics - Leverage the power of Python in forensic investigations”, Preston Miller, Chapin Bryce, Packt Publishing, Second Edition, 2019