Name if the faculty :   Ms. Ritu Aggrawal
Discipline :   Computer Science Engineering
Semester :   3 rd
Subject :   Python Programming
Duration :   15 weeks (August- November 2019)
Work Load (Lecture/ Practical) per week (in hours): Lecture-02, Practical-02

Unit	Topic	Reference	No. of Hours
I	**Introduction:** Fundamental ideas in computer science; modern computer systems, installing Python; basic syntax, interactive shell, editing, saving, and running a script;	Book 1 – ch 1 Book 2 – ch 1	1
	The concept of data types; variables, assignments; numerical types; arithmetic operators and expressions; comments in the program;	Book 1 – ch 2 Book 2 – ch 2	1
	understanding error messages; Control statements: if-else, loops (for, while)	Book 1 – ch 2 Book 2 – ch 3	1
2	**Strings, text files**: String manipulations: subscript operator, indexing, slicing a string;.	Book 1 – ch 2 Book 2 – ch 4	2
	strings and number system: converting strings to numbers and vice versa	Book 1 – ch 2 Book 2 – ch 4	1
	Binary, octal, hexadecimal numbers;	Book 2 – ch 4	1
	text files: reading/writing text and numbers from/to a file;	Book 2 – ch 4	2
	creating and reading a formatted file (csv or tab-separated).	Book 2 – ch 4	1
3	**Lists, dictionary and Design with functions:** Basic list operators,	Book 1 – ch 3 Book 2 – ch 5	1
	replacing, inserting, removing an element;	Book 1 – ch 3 Book 2 – ch 5	2
	searching and sorting lists;	Book 1 – ch 3 Book 2 – ch 5	2
	Dictionary literals, adding, and removing keys, accessing and replacing values; traversing dictionaries.	Book 1 – ch 3 Book 2 – ch 5	2
	Hiding redundancy, complexity; arguments and return values;	Book 1 – ch 3 Book 2 – ch 5	2

	Program structure and design.	Book 1 – ch 4 Book 2 – ch 6	1
	Recursive functions.	Book 1 – ch 4 Book 2 – ch 6	1
4	**Object Oriented concepts:** Classes and OOP: classes, objects, attributes and methods;	Book 1 – ch 5 Book 2 – ch 8	1
	defining classes; design with classes,	Book 1 – ch 5 Book 2 – ch 8	1
	data modelling; persistent storage of objects,	Book 1 – ch 5 Book 2 – ch 8	1
	Inheritance,	Book 1 – ch 5 Book 2 – ch 8	2
	polymorphism, operator overloading; abstract classes;	Book 1 – ch 5 Book 2 – ch 8	2
	exception handling, try block.	Book 1 – ch 5 Book 2 – ch 1	2

Suggested books:

1. "Python with Machine Learning" Dr. A Krishna Mohan, S. Chand , 2019
2. "Fundamentals of Python: First Programs" Kenneth Lambert, Course Technology, Cengage Learning, 2012
3. "Introduction to Computer Science Using Python: A Computational Problem-Solving Focus",By Charles Dierbach, John Wiley & Sons, December 2012,