

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Teaching Plan (Semester-II)

(Dec - 2019 to March-2020)

1. Details of Classes to be taught

Sr. No.	Class	Subject	Course Code and Title	Total Lecturers
1	B. Sc. FY	Computer Science	U-COS-243 Data Structure	45
2	B. Sc. TY	Computer Science	U-COS-645 Introduction to Python Programming	45
3	B. Voc. SY	Computer Technology	Data Structure and Algorithms	60
4	B. Sc. TY	Mathematics (Skill Enhancement)	Python Programming	40

2. Summary of Lesson Plan

Course: Data Structure

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Duration	
			From	To
1	Unit -1: Introduction to Data structures Definition and Basic Terminology Classification of data structure: primitive and non primitive. Operations of data structures and Arrays Introduction of Array	4	09-12-2019	17-12-2019

	<p>Representation of array in computers memory</p> <p>Array Operations: Traversing Insertion Deletion</p>	6	8-12-2019	07-01-2020
2	<p>Unit II Linked List Definition and Components of linked list,</p> <p>Representation of linked list in computers memory</p> <p>Advantages and disadvantages of linked list</p> <p>Types of linked list: Singly linked list, Doubly linked list, Circular linked list and Circular doubly linked list.</p> <p>Operations on singly linked list: creation, insertion, deletion, search and display</p>	5	08-01-2020	21-01-2020
		8	22.01.2020	11-02-2019
3	<p>Unit III Stack and Queues</p> <p>Definition and Array representation of stack</p> <p>Operations on stack- PUSH and POP Applications of Stack</p> <p>Definition of Queue</p> <p>Types of queue: Simple queue, circular queue, double ended queue (deque) priority queue</p> <p>Operations on Queue-Insertion and Deletion</p>	5	12-02-2020	25-02-2020
		5	26-02-2019	09-03-2020

4	Unit IV Trees and Graph Definition: Tree, Binary tree, complete binary tree, Binary search tree, Traversal of Binary Tree: Preorder, Inorder and Postorder. Graphs - terminology Representation of Graph Graph traversals (DFS and BFS)	6	10-03-2019	18-03-2020
		6	23-03-2020	31-03-2020

Course: Introduction to Python Programming

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Duration	
			From	To
1	UNIT I: Beginning Python Introduction, History, important features, overview of python and installation. Lexical Matters: Lines, Comments, Names and Tokens, Doc Strings.	7	12-12-2019	20-12-2019
2	UNIT II: Getting Started			

	<p>Simple Program, Identifiers, Reserved Words, Multi-Line Statements, Operators, variables, assignment, Numbers (int, long, float and complex), Strings. Decision and Looping Statements, Introduction to decision statement, If Statement, if—else statement, if-elif-else statement. Introduction to Looping statement, while loop, for loop, nesting of loop, break, continue and pass statement.</p>	7	1-12-2019	04-01-2020
		8	9-01-2020	24-01-2020
3	<p>UNIT III: Sequence: String, List, Tuples and Error, exceptions</p> <p>Strings, Strings and Operators, String Built-in methods, Lists, List type built-in method, Tuples, Special features of Tuples.</p> <p>What are exceptions?, exceptions in Python, Detecting and handling exceptions, Raising exception, Assertions, Standard exceptions, creating exceptions.</p>	5	25-01-2020	07-02-2020
		5	08-02-2019	27-02-2020

4	<p>Unit IV: Functions, Class and OOPs</p> <p>What are functions? Calling functions, creating functions, passing functions, formal arguments, positional arguments, default arguments, variable length argument, recursion ,</p> <p>Introduction, OOP, Classes, Class attributes, Instances, Instance attribute, building and Method of invocation, Sub classing and derivation, Inheritance, Bult-in functions for classes, instances and other objects, Privacy.</p>	6	28-02-2020	12-03-2020
		7	13-03-2020	28-03-2020

Course: Data Structures and Algorithms

Sr. No.	Unit and Chapters to be covered	Expected No. of Lectures	Duration	
			From	To
1	<p>Analysis of Algorithms</p> <p>Mathematical Background, Process of Analysis, Calculation of Storage Complexity, Calculation of Run Time Complexity</p>	7	13-12-2019	21-12-2019

	<p>Arrays Arrays and Pointers, Sparse Matrices, Polynomials, Representation of Arrays, Row Major Representation, Column Major Representation, Applications, Array operations.</p>	8	27-12-2019	04-01-2020
2	<p>Lists Abstract Data Type-List, Array Implementation of Lists, Linked Lists-Implementation, Doubly Linked Lists-Implementation, Circularly Linked Lists-Implementation, Applications</p>	7	10-01-2020	18-01-2020
	<p>Stacks Abstract Data Type-Stack, Implementation of Stack, Implementation of Stack using Arrays, Implementation of Stack using Linked Lists, Algorithmic Implementation of Multiple Stacks, Applications</p>	3	18-01-2020	24-01-2020
	<p>Queues Abstract Data Type-Queue, Implementation of Queue, Array Implementation, Linked List Implementation, Implementation of Multiple Queues, Implementation of Circular Queues, Array Implementation, Linked List Implementation of a circular queue, Implementation of DEQUEUE, Array Implementation of a dequeue, Linked List Implementation of a dequeue</p>	5	25-01-2020	07-02-2020
3	<p>Trees Abstract Data Type-Tree, Implementation of Tree, Tree Traversals, Binary Trees, Implementation of Binary Tree, Binary Tree Traversals, Recursive Implementation of Binary Tree Traversals, Non Recursive</p>	8	08-02-2020	22-02-2020

	<p>Implementations of Binary Tree Traversals, Applications</p> <p>Graphs Definitions, Shortest Path Algorithms, Dijkstra's Algorithm, Graphs with Negative Edge costs, Acyclic Graphs, All Pairs Shortest Paths Algorithm, Minimum cost Spanning Trees, Kruskal's Algorithm, Prims's Algorithm, Applications, Breadth First Search, Depth First Search, Finding Strongly Connected Components</p>	7	28-02-2020	06-03-2020
4	<p>Searching Linear Search, Binary Search, Applications</p> <p>Sorting Selection Sort, Insertion Sort, Bubble Sort, Quick Sort, 2-way Merge Sort, Heap Sort.</p>	6	07-03-2020	19-03-2020
		9	20-03-2020	28-03-2019