Rajarshi Shahu Mahavidyalaya (Autonomous), Latur

Department of Computer Science

Teaching Plan (Semester-I, III, V)

(June-2019 to Oct-2019)

1. Details of Classes to be taught

Sr. No.	Class	Subject	Course Code and Title	Total Lectures
1	B. Sc. FY	Computer Science	U-COS-144 Basics of Computer Programming	45 (Credit 02)
2	B. Sc. SY	Computer Science	U-COS-344 Computer Networks	45 (Credit 02)
3	M. Sc. SY	Computer Science	Digital Image Processing	60 (Credit 04)

2. Summary of Lesson Plan

Course: Basics of Computer Programming

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Duration	
			From	To
1	**Unit I** Algorithm – Definition, Characteristics, Space Complexity, Time Complexity Problem Solving and Write A Simple Algorithm Flow Chart and Its Symbol Problem Solving with Flowchart, Computer Languages Compilers Interpreters	5 5 2	25-06-2019 08-07-2019 22-07-2019	06-07-2019 21-07-2019 25-07-2019
2	**Unit II** History, Compilers and Interpreters, Keywords, Identifiers, Variables Constants – Character, Integer, Float, String, Escape Sequences Data Types – Built-In and User Defined Operators and Expressions, Operator Types (Arithmetic, Relational, Logical, Assignment, Bitwise, Conditional, Other Operators), Simple Programs Using Printf ( ) And Scanf( )	4 4 5	26-07-2019 05-08-2019 16-08-2019	04-08-2019 14-08-2019 27-08-2019
3	**Unit III** Selection Statements: If Statement, If _ Else Statement, Conditional / Ternary Operator Statement (? :) Switch Statement	5 2	28-08-2019 09-09-2019 14-09-2019	08-09-2019 13-09-2019 27-09-2019

	Loop Control Structures: While, Do-While, For, Nested Structures Break and Continue	6		
4	**Unit IV** Linear Search Binary Search Bubble Sort Insertion Sort Selection Sort	10	28-09-2019	25-10-2019

Course: Computer Networks

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Duration	
			From	To
1	**Unit I** Computer Networks and Uses of Computer Networks Network Hardware and types Network Software Connection Oriented Vs Connectionless Services **Reference Models** OSI Reference Model The TCP/IP Reference Model **Examples of Networks** The internet ARPANET NSFNET Architecture of the Internet Third Generation and Fourth Generation Mobile Phone Networks Wireless LANs: 802.11 RFID and Sensor Networks	4 4 4	22-06-2019 01-07-2019 10-07-2019	26-06-2019 09-07-2019 17-07-2019
2	**Unit II** The Basis for Data Communication **Transmission Media** Magnetic Media Twisted Pairs Coaxial Cable Power Lines Fiber Optics Fiber Cables Wireless Transmission Communication Satellites Digital Modulation and Multiplexing	5 8	22-07-2019 31-07-2019	30-07-2019 20-08-2019
3	**Unit III** Data Link Layer Design Issues Error Control and Flow Control Error Detection and Correction Sliding window Protocols			

	A Protocol Using Go-Back-N A Protocol Using Selective Repeat Network Layer Design Issues Implementation of Connection Oriented Routing Algorithms Naming and Internet Addressing IP Addresses and IPV6	5 5	21-08-2019 03-09-2019	02-09-2019 16-09-2019
4	**Unit IV** Transport Service Elements of Transport Protocols Addressing, Connection Establishment, Connection Release Error Control and Flow Control Multiplexing Congestion Control The Domain Name system Electronic Mail FTP, HTTP, SMTP	3 3 4	17-09-2019 24-09-2019 07-10-2019	23-09-2019 30-09-2019 20-10-2019

Course: Digital Image Processing

Sr. No.	Unit and Chapters to be covered	Expected No. of Lectures	Duration	
			From	To
1	**Unit I** What is digital image processing? Applications of digital image processing, fundamental stapes in digital image processing, Components of digital image processing	6	08-07-2019	13-07-2019
	Elements of visual perception, Light and Electromagnetic Spectrum	4	15-07-2019	18-7-2019
	Image sensing and acquisition devices, a simple image formation model, image sampling and quantization, representing digital images	5	19-07-2019	27-7-2019
2	Unit II Digital Image Representation: Coordinate Conventions, Images as Matrices, Reading Images, Displaying Images, Writing Images, Data Classes, Image Types, Intensity Images, Binary Images	4	28-07-2019	31-7-2019
	A Note on Terminology, converting between Data Classes and Image Types, converting between Data Classes, Converting between Image Classes and Types,	6	01-08-2019	07-8-2019
	Array Indexing: Vector Indexing, Matrix Indexing, Selecting Array Dimensions,	5	08-08-2019	14-08-2019
	Introduction to M- Function Programming: M-Files,			

	Operators, Flow Control, Code Optimization, Interactive I/O.	5	16-08-2019	22-08-2019
3	**Unit III** Transformation Functions: Function imadjust, Logarithmic and Contrast-Stretching Transformations, Histogram Processing and Function Plotting: Generating and Plotting Image Histograms, Histogram Equalization, Histogram Matching (Specification),	7	23-08-2019	31-08-2019
	Spatial Filtering, Linear Spatial Filtering, Nonlinear Spatial Filtering,	7	02-09-2019	09-09-2019
	Frequency Domain Processing: The 2-D Discrete Fourier Transform, Computing and Visualizing the 2-D DFT in MATLA, Filtering in the Frequency Domain, Basic Steps in DFT Filtering.	8	10-09-2019	20-09-2019
4	**Unit IV** A Model of the Image Degradation/Restoration Process, Noise Models	5	21-09-2019	26-09-2019
	Geometric Transformations and Image Registration: Geometric Spatial Transformations, Applying Spatial Transformations to Images, Image Registration	8	27-09-2019	05-10-2019

	Color Image Representation in MATLAB: RGB Images, Indexed Images, IPT Functions for Manipulating RGB and Indexed Images, Converting to Other Color Spaces: NTSC Color Space, The YCbCr Color Space, The HSV Color Space, The CMY and CMYK Color Spaces, The HSI Color Space, The Basics of Color Image Processing	8	07-10-2019	18-10-2019

Dr Renuka Londhe

Name & Signature of Teacher

HoD

Head
Dept. of Computer Science
Rajarshi Shahu Mahavidyalaya, Latur

Principal

PRINCIPAL
Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)

Rajarshi Shahu Mahavidyalaya (Autonomous), Latur

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 Lectures
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

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 Representation of array in computers memory Array Operations: TraversingInsertion Deletion	4 6	09-12-2019 18-12-2019	17-12-2019 31-12-2019

2	**Unit II Linked List** Definition and Components of linked list, Representation of linked list in computers memory Advantages and disadvantages of linked list Types of linked list:Singly linked list, Doubly linked list, Circular linked list and Circular doubly linked list. Operations on singly linked list: creation, insertion, deletion, search and display	5 8	06-01-2020 21.01.2020	20-01-2020 05-02-2020
3	Unit III Stack and Queues Definition and Array representation of stack Operations on stack- PUSH and POP Applications of Stack **Definition of Queue** Types of queue: Simple queue, circular queue, double ended queue (deque) priority queue Operations on Queue-Insertion and Deletion	5 5	10-02-2020 26-02-2020	25-02-2020 09-03-2020

4	Unit IV Trees and Graph Definition: Tree, Binary tree, complete binary tree, **Binary search tree** Traversal of Binary Tree: Preorde, Inorder and Postorder. Graphs - terminology Representation of Graph Graph traversals (DFS and BFS)	6 6	10-03-2020 23-03-2020	22-03-2020 02-04-2020

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	26-12-2019
2	**UNIT II: Getting Started** 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.	7 8	27-12-2019 11-01-2020	10-01-2020 30-01-2020

3	UNIT III: **Sequence: String,List,** **Tuples and Error, exceptions** Strings, Strings and Operators, String Built-in methods, Lists, List type built-in method, Tuples, Special features of Tuples. What are exceptions? , exceptions in Python, Detecting and handling exceptions, Raising exception,Assertions, Standard exceptions, creating exceptions.	5 5	31-01-2020 13-02-2019	08-02-2020 21-02-2020
4	**Unit IV: Functions, Class and OOPs** What are functions? Calling functions, creating functions,passing functions, formal arguments, positional arguments, default arguments, variable length argument,recursion , Introduction, OOP, Classes,Class attributes, Instances, Instance attribute, buildingand Method of invocation, Sub classing and derivation, Inheritance, Bulit-in functionsfor classes, instances and otherobjects, Privacy.	6 7	22-02-2020 07-03-2020	06-03-2020 22-03-2020

Course: Data Structures and Algorithms

Sr. No.	Unit and Chapters to be covered	Expected No. of Lectures	Duration	
			From	To
1	**Analysis of Algorithms** Mathematical Background, Process of Analysis, Calculation of Storage Complexity, Calculation of Run Time Complexity **Arrays** Arrays and Pointers, Sparse Matrices, Polynomials, Representation of Arrays, Row Major Representation, Column Major Representation, Applications, Array operations.	7 8	13-12-2019 24-12-2019	23-12-2019 06-01-2020
2	**Lists** Abstract Data Type-List, Array Implementation of Lists, Linked Lists-Implementation, Doubly Linked Lists-Implementation, Circularly Linked Lists-Implementation, Applications **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 **Queues**	7 3	07-01-2020 20-01-2020	18-01-2020 24-01-2020

	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	5	25-01-2020	31-01-2020
3	**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 Implementations of Binary Tree Traversals, Applications **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	8 7	01-02-2020 15-02-2020	14-02-2020 25-02-2020

	Components			
4	**Searching** Linear Search, Binary Search, Applications **Sorting** Selection Sort, Insertion Sort, Bubble Sort, Quick Sort, 2-way Merge Sort, Heap Sort.	6 9	28-02-2020 14-03-2020	13-03-2020 28-03-2020

Dr Renuka Londhe

Name & Signature of Teacher

HoD

Head
Dept. of Computer Science
Rajarshi Shahu Mahavidyalaya, Latur

Principal

PRINCIPAL
Rajarshi Shahu Mahavidyalaya,Latur
(Autonomous)