Rajarshi Shahu Mahavidyalaya (Autonomous), Latur

Department of Computer Science

Teaching Plan (Semester-I)

(July-2021 to December-2021)

Name of the Teacher: **Dr. Renuka Londhe**

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-144 Basics of Computer Programming	45
2	B. Sc. SY	Computer Science	U-COS-344 Computer Networks	45
3	M. Sc. SY	Computer Science	Digital Image Processing	60

Subject: Computer Science

Course: Basics of Computer Programming (Paper II)

Sr. No.	Unit and Chapter to be Covered	Expected No. of Lectures	Duration	
			From	To
1	**Unit I Algorithm and Flowcharts** Algorithm – Definition, Characteristics, Space Complexity, Time Complexity Problem Solving and Writing Simple Algorithms Flow Chart and Its Symbols, Problem Solving with Flowchart Computer Languages, Compilers, Interpreters	2 4 4 2	23-09-2021 25-09-2021 08-10-2021 21-10-2021	24-09-2021 07-10-2021 16-10-2021 22-10-2021
2	**Unit II Introduction to C Programming** History, 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( )	5 3 2	23-10-2021 22-10-2021 12-11-2021	11-10-2021 11-11-2021 13-11-2021
3	**Unit III Selection and Control Structures** Selection Statements: If Statement, If _ Else Statement, Conditional / Ternary Operator Statement (? :) Switch Statement Loop Control Structures: While, Do-While, For, Nested Structures Break and Continue	6 2 5	14-11-2021 26-11-2021 2-12-2021	25-11-2021 27-11-2021 10-12-2021
4	**Unit IV Searching and Sorting Techniques** Linear Search Binary Search Bubble Sort Insertion Sort Selection Sort	10	11-12-2021	31-12-2021

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 NetworkSoftware 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 WirelessLANs: 802.11 RFID and Sensor Networks	4 4 4	5-7-2021 13-7-2021 26-7-2021	12-7-2021 20-7-2021 2-8-2021
2	**Unit II:** The Basis for Data Communication **Transmission Media**Magnetic Media Twisted Pairs Coaxial CablePower Lines Fiber Optics Fiber Cables Wireless Transmission Communication Satellites Digital Modulation and Multiplexing	3 3 4	3-8-2021 17-8-2021 25-8-2021	11-8-2021 24-8-2021 1-9-2021

3	**Unit III** Data Link Layer Design Issues Error Control and Flow ControlError Detection and CorrectionSliding 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 AddressingIP Addresses and IPV6	5 5	7-9-2021 20-9-2021	15-9-2021 28-9-2021
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 systemElectronic Mail FTP, HTTP, SMTP **Revision**	3 3 4 3	29-9-2021 6-10-2021 13-10-2021 26-10-2021	5-10-2021 12-10-2021 25-10-2021 1-11-2021

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	5-7-2021	10-7-2021
	Elements of visual perception, Lightand Electromagnetic Spectrum	4	12-7-2021	15-7-2021
	Image sensing and acquisition devices, a simple image formation model, image sampling and quantization, representing digitalimages	5	16-7-2021	22-7-2021
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	5	23-7-2021	28-7-2021
	A Note on Terminology, converting between Data Classes and Image Types, converting between Data Classes, Converting between Image Classes and Types,	5	29-7-2021	2-8-2021
	Array Indexing: Vector Indexing, Matrix Indexing, Selecting Array Dimensions, M-Function	5	3-8-2021	7-8-2021

3	**Unit III** Transformation Functions: Function imadjust, Logarithmic and Contrast-StretchingTransformations, Histogram Processing and Function Plotting: Generating and Plotting Image Histograms, Histogram Equalization, Histogram Matching(Specification), Spatial Filtering, Linear Spatial Filtering, Nonlinear SpatialFiltering, 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.	5 5 5	9-8-2021 17-8-2021 26-8-2021	14-8-2021 25-8-2021 2-9-2021
4	**Unit IV** A Model of the Image Degradation/Restoration Process,Noise Models Geometric Transformations and Image Registration: Geometric Spatial Transformations, Applying Spatial Transformations to Images, Image Registration, Color Image Representation in MATLAB: RGB Images, Indexed Images, IPT Functions for Manipulating RGB and Indexed Images, Converting to Other Color Spaces: NTSC Color Spac **Seminars** **Revision**	8 5 2	3-9-2021 15-9-2021 21-9-2021 01-10-21 18-10-21	14-9-2021 20-9-2021 24-9-2021 15-10-21 30-10-21

Name of the teacher and Signature

Dr Renuka Londhe

Head of Department

Head
Dept. of Computer Science
Rajarshi Shahu Mahavidyalaya, Latur

Principal

PRINCIPAL
Rajarshi Shahu Mahavidyala
(Autonomous), Latur

Rajarshi Shahu Mahavidyalaya, (Autonomous), Latur

Department of Computer Science

Teaching Plan (Semester-VI, IV)

(Dec-2021 to April-2022)

Name of the Teacher: Dr. Renuka R. Londhe

1. Details of Classes to be taught:

Sr. No.	Class	Subject	Course code and Title	Total Lectures
1	B. Sc. FY	Computer Science	Data Structure (U-COS-243)	45
2	M.Sc. (CS) SY	Computer Science	Big Data Analysis (M. Sc. CS-CC-09)	60

Course: Big Data Analysis

(M. Sc. CS-CC-09)

1. Summary of Lesson Plan

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Date	Academic activities to be organized	No. of Test / Assignment with topic and date
1	**Introduction to Big Data Analytics & Data Analytics Lifecycle** Big Data Overview, Data Structures, Analyst Perspective on Data Repositories, State of the Practice in Analytics, Bl Versus Data Science, Current Analytical Architecture, Drivers of Big Data, Emerging Big Data Ecosystemand a New Approach to Analytics, Key Roles for the New Big Data Ecosystem. Data Analytics Lifecycle Overview Key Roles for a Successful Analytics, Project Background and Overview of Data Analytics Lifecycle Phase 1: Discovery: Learning the Business Domain, Resources, Framing the Problem, Identifying Key Stakeholders	07 05 05 03 03	20.12.2021 to 28.12.2021 29.12.2021 to 3.01.2022 04.01.2022 to 11.01.2022 12.01.2022 to 14.01.2022 1 5.01.2022 to 17.01.2022	Use of Black board and Projector Presentation and also the use of smart board for programming	

	Identifying Potential DataSources. Phase 2: Data Preparation: Preparing the Analytic Sandbox, Performing ETLT, Learning About the Data, Data Conditioning, Survey and Visualize, Common Tools for theData Preparation Phase. Phase 3: Model Planning: DataExploration and Variable Selection, Model Selection, Common Tools for the Model Planning Phase. Phase 4: Model Building:Common Tools for the Mode/Building Phase. Phase 5: Communicate Results.Phase 6: Operationalize. Seminar	03 02 03	18.01.2022 to 20.01.2022 21.01.2022 to 22.01.2021 24.01.2022 to 27.01.2022		

2	**Unit- II: Review of Basic DataAnalytic Methods Using R** Introduction to R: Graphical User Interfaces, Data Import andExport, Attribute and Data Types, Descriptive Statistics, Exploratory Data Analysis, Visualization Before Analysis, Dirty Data, visualizing a Single Variable, Examining Multiple Variables, Data Exploration Versus Presentation Statistical Methods for Evaluation: Hypothesis Testing, Difference of Means, Wilcoxon Rank Sum Test, Type I and TypeII Errors, Power and Sample Size, ANOVA. Seminar	05 08 10 03	28.01.2022 to 02.02.2022 03.02.2022 to 09.02.2022 10.02.2022 to 23.02.2022 24.02.2022 to 26.02.2022	Use of Black board and smart board. Also the use of projector for thegraphical presentation	Unit Test -I
3	Unit III: Advanced Analytical Theory and Methods: Classification &Clustering Decision Trees: Overview of a Decision Tree, Decision tree Algorithms, Decision Trees in R Naïve Bayes, Naïve Bayes in R. Overview of Clustering, K- means, Use Cases, Determining the Number of Clusters, Diagnostics, Reasons to Choose andCautions. Seminar	08 07 03	28.02.2022 to 09.03.2022 10.03.2022 to 19.03.2022 21.03.2022 to 23.03.2021	Use of Black board and smart board. Also, the use of projector for the presentation	

4	**Unit IV: Advanced Analytical Theory and Methods: Association Rules & Clustering** Overview of Association, Evaluation of Candidate rules, Applications of Association Rules, An Example: Transaction in a Grocery Store, Validations & testing. Linear Regression: Use cases, model description, and diagnostics. Logistic Regression:Use cases, model description, and diagnostics. Reasons to choose & cautions. Seminar Revision	06 06 02 03	24.03.2022 to 31.03.2022 01.04.2022 to 09.04.2022 11.04.2022 to 12.04.2022 13.04.2022 to 16.04.2022	Use of Black board and smart board. also the use of projector for the graphical presentation	Activity BasedUnit Test-II

Course: Data Structure

(U-COS-243)

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Duration	
			From	To
1	**Unit I** **Introduction To Data Structure and Arrays** Definition, Classification of Data Structure: Primitive and Non-Primitive. Operations of Data Structures Introduction To Arrays Representation Of Array in Computers Memory Array Operations: Traversing, Insertion, Deletion	5 5	3-02-2022 12-02-2022	11-02-2022 25-02-2022
2	**Unit II Linked List** Definition, Components of Linked List, Representation Of Linked List in ComputersMemory Advantages and Disadvantages of Linked List Types of Linked List: Singly Linked List, DoublyLinked List, Circular Linked List and Circular Doubly Linked List. Operations On Singly Linked List: Creation, Insertion, Deletion, Search and Display	5 3 5	26-02-2022 11-03-2022 18-03-2022	10-03-2022 17-03-2022 26-03-2022
3	**Unit III: Stack and Queue** Definition Of Stack, Array Representation Of Stack Operations On Stack- PUSH and POP Definition Of Queue, Types Of Queue: Simple Queue, Circular Queue, Double Ended Queue (Deque) Priority Queue, Operations On Queue-Insertion and Deletion, Tower Of Hanoi Problem.	6 6	27-03-2022 (Extra) 31-03-2022	28-03-2022 (Extra) 09-04-2022

4	**Unit IV: Tree 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 Traversals (DFS And BFS)	6 4	15-04-2022 25-04-2022 (Extra Class)	23-04-2022 30-04-2022 (Extra Class)

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