

# **Rajarshi Shahu Mahavidyalaya, (Autonomous), Latur**

## **Department of Computer Science**

### **Teaching Plan (Semester-I)**

**(September-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

### Basics of Computer Programming

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Duration	
			From	To
1	<b>Unit I</b>			
	Algorithm – Definition, Characteristics, Space Complexity, Time Complexity	2	23-09-21	24-09-21
	Problem Solving and Writing Simple Algorithm	4	25-09-21	07-10-21
	Flow Chart and Its Symbols, Problem Solving with Flowchart,	4	08-10-21	16-10-21
	Computer Languages, Compilers, Interpreters	2	21-10-21	22-10-21
2	<b>Unit II</b> Unit II 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( )			
3	Unit IV 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			
4	<p style="text-align: center;"><b>Unit IV</b></p> Linear Search Binary Search Bubble Sort Insertion Sort Selection Sort			

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**Course: Computer Networks**

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Duration	
			From	To
1	<p style="text-align: center;"><b>Unit I</b></p> Computer Networks and Uses of Computer Networks Network Hardware and types Network Software Connection Oriented Vs Connectionless Services  <b>Reference Models</b> OSI Reference Model The TCP/IP Reference Model  <b>Examples of Networks</b> The internet ARPANET NSFNET Architecture of the Internet Third Generation and Fourth Generation Mobile Phone Networks Wireless LANs: 802.11 RFID and Sensor Networks		5-7-21	12-7-21
			13-7-21	20-7-21
			26-7-21	2-8-21
2	<p style="text-align: center;"><b>Unit II</b></p> The Basis for Data Communication			

	<p><b>Transmission Media</b>  Magnetic Media  Twisted Pairs  Coaxial Cable  Power Lines  Fiber Optics  Fiber Cables</p> <p>Wireless Transmission</p> <p>Communication Satellites</p> <p>Digital Modulation and Multiplexing</p>		<p>3-8-21</p> <p>17-8-21</p> <p>25-8-21</p>	<p>11-8-21</p> <p>24-8-21</p> <p>1-9-21</p>
3	<p><b>Unit III</b>  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</p> <p>Network Layer Design Issues  Implementation of Connection  Oriented Routing Algorithms  Naming and Internet Addressing  IP Addresses and IPV6</p>		<p>7-9-21</p> <p>20-9-21</p>	<p>15-9-21</p> <p>28-9-21</p>
4	<p><b>Unit IV</b>  Transport Service  Elements of Transport Protocols  Addressing, Connection  Establishment, Connection Release</p> <p>Error Control and Flow Control  Multiplexing  Congestion Control</p> <p>The Domain Name system  Electronic Mail  FTP, HTTP, SMTP</p> <p><b>Revision</b></p>		<p>29-9-21</p> <p>6-10-21</p> <p>13-10-21</p> <p>26-10-21</p>	<p>5-10-21</p> <p>12-10-21</p> <p>25-10-21</p> <p>1-11-21</p>

**Course: Digital Image Processing**

Sr. No.	Unit and Chapters to be covered	Expected No. of Lectures	Duration	
			From	To
1	<b>Unit I</b>			
	What is digital image processing? Applications of digital image processing, fundamental stapes in digital image processing, Components of digital image processing	6	5-7-21	10-7-21
	Elements of visual perception, Light and Electromagnetic Spectrum	4	12-7-21	15-7-21
	Image sensing and acquisition devices, a simple image formation model, image sampling and quantization, representing digital images	5	16-7-21	22-7-21
2	<b>Unit II</b>			
	Digital Image Representation: Coordinate Conventions, Images as Matrices, Reading Images, Displaying Images, Writing Images, Data Classes, Image Types, Intensity Images, Binary Images	5	23-7-21	28-7-21
	A Note on Terminology, converting between Data Classes and Image Types, converting between Data Classes, Converting between Image Classes and Types,	5	29-7-21	2-8-21
	Array Indexing: Vector Indexing, Matrix Indexing, Selecting Array Dimensions,	5	3-8-21	7-8-21
	Introduction to M- Function			

	Programming: M-Files, Operators, Flow Control, Code Optimization, Interactive I/O.	5	9-8-21	14-8-21
3	<p style="text-align: center;"><b>Unit III</b></p> <p>Transformation Functions: Function imadjust, Logarithmic and Contrast-Stretching Transformations, Histogram Processing and Function Plotting: Generating and Plotting Image Histograms, Histogram Equalization, Histogram Matching (Specification),</p> <p>Spatial Filtering, Linear Spatial Filtering, Nonlinear Spatial Filtering,</p> <p>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.</p>	7	17-8-21	25-8-21
		7	26-8-21	2-9-21
		8	3-9-21	14-9-21
4	<p style="text-align: center;"><b>Unit IV</b></p> <p>A Model of the Image Degradation/Restoration Process, Noise Models</p> <p>Geometric Transformations and Image Registration: Geometric Spatial Transformations, Applying Spatial Transformations to Images, Image Registration</p>	5	15-9-21	20-9-21
		8	21-9-21	29-9-21

	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	10	1-10-21	14-10-21
	<b>Seminars</b>		18-10-21	28-10-21
	<b>Revision</b>		29-10-21	1-11-21

**Name of the teacher and  
Signature**

**Head of Department**

**Principal**

# Rajarshi Shahu Mahavidyalaya, (Autonomous), Latur

## Department of Computer Science

### Teaching Plan (Semester-I)

(September-2021 to December-2021)

Class B. Sc. FY

**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	<b>Unit I Algorithm and Flowcharts</b>			
	Algorithm – Definition, Characteristics, Space Complexity, Time Complexity	2	23-09-21	24-09-21
	Problem Solving and Writing Simple Algorithms	4 4	25-09-21 08-10-21	07-10-21 16-10-21
	Flow Chart and Its Symbols, Problem Solving with Flowchart	2	21-10-21	22-10-21
	Computer Languages, Compilers, Interpreters			
2	<b>Unit II Introduction to C Programming</b>			
	History, Keywords, Identifiers, Variables, Constants – Character, Integer, Float, String, Escape Sequences, Data Types – Built-In and User Defined	5	23-10-21	11-10-21
	Operators and Expressions, Operator Types (Arithmetic, Relational, Logical, Assignment, Bitwise, Conditional, Other Operators), Simple Programs Using Printf() and Scanf()	3 2	22-10-21 12-11-21	11-11-21 13-11-21
3	<b>Unit III Selection and Control Structures</b>			
	Selection Statements: If Statement, If _ Else Statement, Conditional / Ternary Operator Statement (?:)	6	14-11-21	25-11-21
	Switch Statement	2	26-11-21	27-11-21
	Loop Control Structures: While, Do-While, For, Nested Structures Break and Continue	5	2-12-21	10-12-21
4	<b>Unit IV Searching and Sorting Techniques</b>			
	Linear Search			



	Binary Search Bubble Sort Insertion Sort Selection Sort	10	11-12-21	31-12-21
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**Principal**

# **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:**

<b>Sr. No.</b>	<b>Class</b>	<b>Subject</b>	<b>Course code and Title</b>	<b>Total Lectures</b>
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	<p><b>Introduction to Big Data Analytics &amp; Data Analytics Lifecycle</b></p> <p>Big Data Overview, Data Structures, Analyst Perspective on Data Repositories, State of the Practice in Analytics, BI Versus Data Science, Current Analytical Architecture, Drivers of Big Data,</p> <p>Emerging Big Data Ecosystem and a New Approach to Analytics, Key Roles for the New Big Data Ecosystem.</p> <p>Data Analytics Lifecycle Overview</p> <p>Key Roles for a Successful Analytics, Project Background and Overview of Data Analytics Lifecycle</p> <p>Phase 1: Discovery: Learning the Business Domain, Resources, Framing the Problem, Identifying Key Stakeholders, Interviewing the Analytics Sponsor, Developing Initial Hypotheses,</p>	<p>07</p> <p>05</p> <p>05</p> <p>03</p> <p>03</p>	<p>20.12.2021 to 28.12.2021</p> <p>29.12.2021 to 3.01.2022</p> <p>04.01.2022 to 11.01.2022</p> <p>12.01.2022 to 14.01.2022</p> <p>15.01.2022 to 17.01.2022</p>	<p>Use of Black board and Projector Presentation and also the use of smart board for programming</p>	

	<p>Identifying Potential Data Sources.</p> <p>Phase 2: Data Preparation: Preparing the Analytic Sandbox, Performing ETLT, Learning About the Data, Data Conditioning, Survey and Visualize, Common Tools for the Data Preparation Phase.</p> <p>Phase 3: Model Planning: Data Exploration and Variable Selection, Model Selection, Common Tools for the Model Planning Phase.</p> <p>Phase 4: Model Building: Common Tools for the Mode/Building Phase.</p> <p>Phase 5: Communicate Results.</p> <p>Phase 6: Operationalize.</p> <p>Seminar</p>	<p>03</p> <p>02</p> <p>03</p>	<p>18.01.2022 to 20.01.2022</p> <p>21.01.2022 to 22.01.2021</p> <p>24.01.2022 to 27.01.2022</p>		
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2	<p><b>Unit- II: Review of Basic Data Analytic Methods Using R</b></p> <p>Introduction to R: Graphical User Interfaces, Data Import and Export, 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</p> <p>Statistical Methods for Evaluation: Hypothesis Testing, Difference of Means, Wilcoxon Rank Sum Test, Type I and Type II Errors, Power and Sample Size, ANOVA.</p> <p>Seminar</p>	<p>05</p> <p>08</p> <p>10</p> <p>03</p>	<p>28.01.2022 to 02.02.2022</p> <p>03.02.2022 to 09.02.2022</p> <p>10.02.2022 to 23.02.2022</p> <p>24.02.2022 to 26.02.2022</p>	<p>Use of Black board and smart board. Also the use of projector for the graphical presentation</p>	<p>Unit Test -I</p>
3	<p>Unit III: Advanced Analytical Theory and Methods: Classification &amp; Clustering.</p> <p>Decision Trees: Overview of a Decision Tree, Decision tree Algorithms, Decision Trees in R</p> <p>Naïve Bayes, Naïve Bayes in R.</p> <p>Overview of Clustering, K-means, Use Cases, Overview of the Method, Determining the</p>	<p>05</p> <p>03</p> <p>07</p> <p>03</p>	<p>28.02.2022 to 05.03.2022</p> <p>07.03.2022 to 09.03.2022</p> <p>10.03.2022 to 19.03.2022</p> <p>21.03.2022 to 23.03.2021</p>	<p>Use of Black board and smart board. Also, the use of projector for the presentation</p>	

	Number of Clusters, Diagnostics, Contents, Reasons to Choose and Cautions.  Seminar				
4	<b>Unit IV: Advanced Analytical Theory and Methods:</b> <b>Association Rules &amp; Clustering</b> 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 Based  Unit Test-II

**Name of the Teacher  
And Signature**

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