

# Rajarshi Shahu Mahavidyalaya, (Autonomous), Latur

## Department of Computer Science

Teaching Plan (Semester-I, III, V)

(July-2020 to Dec-2020)

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
4	B. Sc. TY	Computer Science (Skill Enhancement)	Python for Data Science	Online 4 Week

### 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	<b>Unit I</b> Algorithm – Definition, Characteristics, Space Complexity, Time Complexity Problem Solving and Write A Simple Algorithm	5	09-09-2020	18-09-2020

	Flow Chart and Its Symbol Problem Solving with Flowchart, Computer Languages Compilers Interpreters	5 2	19-09-2020 3-10-2019	01-10-2020 08-10-2020
2	<b>Unit II</b> 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	9-10-2020 22-10-2020 31-10-2020	17-10-2020 30-10-2020 12-11-2020
3	<b>Unit III</b> 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	5 2 6	19-11-2020 28-11-2020 04-12-2020	27-11-2020 3-12-2020 19-12-2020
4	<b>Unit IV</b> Linear Search Binary Search Bubble Sort Insertion Sort Selection Sort	2 2 2 2 2	24-12-2020 1-01-2021 8-01-2021 15-01-2021 22-01-2021	31-12-2020 7-01-2021 9-01-2021 16-01-2021 23-01-2021

**Course: Computer Networks**

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Duration	
			From	To
1	<p align="center"><b>Unit I</b></p> <p>Computer Networks and Uses of Computer Networks                      Network Hardware and types                      Network Software                      Connection Oriented Vs Connectionless Services</p> <p><b>Reference Models</b>                      OSI Reference Model                      The TCP/IP Reference Model</p> <p><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</p>	4	13-07-2020	20-07-2020
		4	21-07-2020	29-07-2020
		4	3-08-2020	10-08-2020
2	<p align="center"><b>Unit II</b></p> <p>The Basis for Data Communication</p> <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>	5	11-08-2020	19-08-2020
		4	24-08-2020	01-09-2020
		4	2-09-2020	08-09-2020

3	<p style="text-align: center;"><b>Unit III</b></p> <p>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>	5	9-9-2020	21-09-2020
		5	22-09-2020	30-09-2020
4	<p style="text-align: center;"><b>Unit IV</b></p> <p>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>	3	05-10-2020	07-10-2020
		3	12-10-2020	14-10-2020
		4	19-10-2020	27-10-2020

**Course: Digital Image Processing**

Sr. No.	Unit and Chapters to be covered	Expected No. of Lectures	Duration	
			From	To
1	<p style="text-align: center;"><b>Unit I</b></p> <p>What is digital image processing?  Applications of digital image processing, fundamental stapes in digital image processing, Components of digital image processing</p>	6	13-07-2020	18-07-2020
	<p>Elements of visual perception, Light and Electromagnetic Spectrum</p>	4	20-07-2029	22-07-2020

	Image sensing and acquisition devices, a simple image formation model, image sampling and quantization, representing digital images	5	23-07-2020	31-07-2020
2	<p style="text-align: center;"><b>Unit II</b></p> <p>Digital Image Representation: Coordinate Conventions, Images as Matrices, Reading Images, Displaying Images, Writing Images, Data Classes, Image Types, Intensity Images, Binary Images</p> <p>A Note on Terminology, converting between Data Classes and Image Types, converting between Data Classes, Converting between Image Classes and Types,</p> <p>Array Indexing: Vector Indexing, Matrix Indexing, Selecting Array Dimensions,</p> <p>Introduction to M- Function Programming: M-Files, Operators, Flow Control, Code Optimization, Interactive I/O.</p>	5	4-08-2020	8-08-2020
		5	10-08-2020	14-08-2020
		5	17-08-2020	24-08-2020
		5	25-08-2020	29-08-2020
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>	7	31-08-2020	7-09-2020

	Spatial Filtering, Linear Spatial Filtering, Nonlinear Spatial Filtering,	7	8-09-2020	15-09-2020
	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	17-09-2020	25-09-2020
4	<b>Unit IV</b>			
	A Model of the Image Degradation/Restoration Process, Noise Models	5	28-09-2020	3-10-2020
	Geometric Transformations and Image Registration: Geometric Spatial Transformations, Applying Spatial Transformations to Images, Image Registration	8	05-10-2020	13-10-2020
	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	14-10-2020	27-10-2020

Dr. Renuka Londhe  
Assistant Professor

HoD

Principal

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

**Teaching Plan (Semester-II)**

**(Feb-2021 to May 2021)**

**1. Details of Classes to be taught**

Sr. No.	Class	Name of Asst. Prof.	Subject	Paper	Total Lecturers:
1	B. Sc. FY	Dr R. R. Londhe	Computer Science	U-COS-243 Data structure	45 (Credit 2)

**2. Summary of Lesson Plan**

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Duration From	Duration To
1	<b>Unit -1: Introduction to Data structures and Arrays</b>  Definition and Basic Terminology Classification of data structure: primitive and non-primitive. Operations of data structures  Introduction of Array Representation of array in computers memory Array Operations: Traversing Insertion Deletion	10	10-03-2021  18-03-2021	17-03-2021  25-03-2021
2	<b>Unit II Linked List</b>	13		

	<p>Definition and Components of linked list, Representation of linked list in computers memory 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. Operations on singly linked list: creation, insertion, deletion, search and display</p>		<p>26-03-2021</p> <p>06-04-2021</p>	<p>05-04-2021</p> <p>17-04-2021</p>
3	<p><b>Unit III Stack and Queues</b></p> <p>Definition and Array representation of stack Operations on stack- PUSH and POP Applications of Stack</p> <p>Definition of Queue Types of queue: Simple queue, circular queue, double ended queue (deque) priority queue Operations on Queue-Insertion and Deletion</p>	10	<p>19-04-2021</p> <p>29-04-2021</p>	<p>28-04-2021</p> <p>07-05-2021</p>
4	<p><b>Unit IV Trees and Graph</b></p> <p>Definition: Tree, Binary tree, complete binary tree,</p>		08-05-2021	16-05-2021



	Binary search tree,  Traversal of Binary Tree: Preorder, Inorder and Postorder. Graphs - terminology Representation of Graph Graph traversals (DFS and BFS)	12	17-05-2021	30-05-2019
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### Details of Class to be taught

Sr. No.	Class	Name of Asst. Prof.	Subject	Paper	Total Lecturers:
1	B. Sc. TY	Dr R. R. Londhe	Computer Science	U-COS-642 Introduction to Python Programming	45 (Credit 2)

### Summary of Lesson Plan

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Duration From	Duration To
1	<b>Getting Started:</b> Introduction, Lexical Matters: Lines, Comments, Names and Tokens, Doc Strings, Simple Program, Identifiers, Operators, variables, Decision and Looping Statements, break, continue and pass statement.	15	22-02-2021	15-03-2021
2	<b>Sequence: String, List, Tuples and Error, exceptions:</b> Strings, Strings and Operators, String Built-in	08	16-03-2021	27-03-2021
			28-03-2021	01-04-2021

	<p>methods, Lists, List type built-in method, Tuples, Special features of Tuples, Dictionary</p> <p>What are exceptions? exceptions in Python, Detecting and handling exceptions, raising exception, Assertions, Standard exceptions, creating exceptions.</p>		02-04-2021	10-04-2021
<b>3</b>	<p><b>Functions, Class and OOPs:</b></p> <p>What are functions, calling functions, creating functions, passing functions, recursion</p> <p>Introduction to OOP, Classes, Class attributes, Instances, Instance attribute, building and Method of invocation, Sub classing and derivation, Inheritance, Built-in functions for classes, instances and other objects privacy.</p>	<b>13</b>	11-04-2021  16-04-2021	15-04-2021  30-04-2021

<b>4</b>	<b>Graphical Interfaces</b> Graphical user interfaces, event-driven programming paradigm, tkinter module, creating simple GUI, button, labels, entry, dialogs, widget attribute - sizes, fonts, color layouts, nested frames.	9	02-05-2021	15-05-2021
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### Details of Class to be taught

Sr. No.	Class	Name of Asst. Prof.	Subject	Paper	Total Lecturers:
1	M. Sc. SY	Dr R. R. Londhe	Big Data Analysis	P-BDA-426 Big Data Analysis	60 (Credit 4)

### Summary of Lesson Plan

Sr. No.	Unit and Chapter to be covered	Expected No. of Lectures	Duration From	Duration To
1	<b>Introduction to Big Data Analytics &amp; Data Analytics Lifecycle</b> Data Structures, BI Versus Data Science, Current Analytical Architecture, Drivers of Big Data, Emerging Big Data Ecosystem and a New Approach to Analytics, Key Roles for the New Big Data Ecosystem.	07	22-02-2021	03-03-2021
	Data Analytics Lifecycle Overview Key Roles for a Successful Analytics, Project Background and Overview of Data Analytics Lifecycle	08	04-03-2021	14-03-2021

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</p> <p>Statistical Methods for Evaluation: Hypothesis Testing, Difference of Means, Wilcoxon Rank- SumTest, Type I and Type II Errors, Power and Sample Size, ANOVA.</p>	07	15-03-2021	25-03-2021
3	<p><b>Unit III: Advanced Analytical Theory and Methods: Classification &amp;Clustering.</b></p> <p>Decision Trees: Overview of a Decision Tree, Decision tree Algorithms, Decision Trees in R, Naïve Bayes, Naïve Bayes in R.</p> <p>Overview of Clustering, K-means, Use Cases, Overview of the Method, Determining the Number of Clusters, Diagnostics, Contents, Reasons to Choose and Cautions.</p>	08	08-04-2021	17-04-2021
4	<p><b>Unit IV: Advanced Analytical Theory and Methods: Association Rules &amp;Clustering.</b></p> <p>Overview of Association, Evaluation of Candidate rules, Applications of</p>	07	25-05-2021	03-05-2021

<p>Association Rules, An Example: Transaction in a Grocery Store, Validations &amp; testing.</p> <p>Linear Regression: Use cases, model description, and diagnostics. Logistic Regression: Use cases, model description, and diagnostics. Reasons to choose &amp; cautions.</p>	08	04-05-2021	15-05-2021
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**Dr Renuka Londhe**

**HoD**

**Principal**