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	**Unit I** 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 3-10-2020	01-10-2020 08-10-2020
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	9-10-2020 22-10-2020 31-10-2020	17-10-2020 30-10-2020 12-11-2020
3	**Unit III** 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	**Unit IV** 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	**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	13-07-2020 21-07-2020 3-08-2020	20-07-2020 29-07-2020 10-08-2020
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 4 4	11-08-2020 24-08-2020 2-09-2020	19-08-2020 01-09-2020 08-09-2020

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	5	9-9-2020	21-09-2020
	Network Layer Design Issues Implementation of Connection Oriented Routing Algorithms Naming and Internet Addressing IP Addresses and IPV6	5	22-09-2020	30-09-2020
4	**Unit IV** Transport Service Elements of Transport Protocols Addressing, Connection Establishment, Connection Release	3	05-10-2020	07-10-2020
	Error Control and Flow Control Multiplexing Congestion Control	3	12-10-2020	14-10-2020
	The Domain Name system Electronic Mail FTP, HTTP, SMTP	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	**Unit I** What is digital image processing? Applications of digital image processing, fundamental stapes in digital image processing, Components of digital image processing	6	13-07-2020	18-07-2020
	Elements of visual perception, Light and Electromagnetic Spectrum	4	20-07-2020	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	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	4-08-2020	8-08-2020
	A Note on Terminology, converting between Data Classes and Image Types, converting between Data Classes, Converting between Image Classes and Types,	5	10-08-2020	14-08-2020
	Array Indexing: Vector Indexing, Matrix Indexing, Selecting Array Dimensions,	5	17-08-2020	24-08-2020
	Introduction to M- Function Programming: M-Files, Operators, Flow Control, Code Optimization, Interactive I/O.	5	25-08-2020	29-08-2020
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	31-08-2020	7-09-2020

	Spatial Filtering, Linear Spatial Filtering, Nonlinear Spatial Filtering, 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.	7 8	8-09-2020 17-09-2020	15-09-2020 25-09-2020
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 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	5 8 10	28-09-2020 05-10-2020 14-10-2020	3-10-2020 13-10-2020 27-10-2020

Dr Renuka Londhe
Name & Signature of Teacher

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Head
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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	**Unit -1: Introduction to Data structures and Arrays** 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	**Unit II Linked List**	13		

	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		26-03-2021 06-04-2021	05-04-2021 17-04-2021
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	10	19-04-2021 29-04-2021	28-04-2021 07-05-2021
4	**Unit IV Trees and Graph** Definition: Tree, Binary tree, complete binary tree,		08-05-2021	16-05-2021

	Binary search tree, Traversal of Binary Tree: Preorde, Inorder and Postorder. Graphs - terminology Representation of Graph Graph traversals (DFS and BFS)	12	17-05-2021	30-05-2019

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	**Getting Started:** 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 16-03-2021	15-03-2021 27-03-2021
2	**Sequence: String, List, Tuples and Error, exceptions:** Strings, Strings and Operators, String Built-in	08	28-03-2021	01-04-2021

	methods, Lists, List type built-in method, Tuples, Special features of Tuples, Dictionary What are exceptions? exceptions in Python, Detecting and handling exceptions, raising exception, Assertions, Standard exceptions, creating exceptions.		02-04-2021	10-04-2021
3	**Functions, Class and OOPs:** What are functions, calling functions, creating functions, passing functions, recursion 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.	**13**	11-04-2021 16-04-2021	15-04-2021 30-04-2021

4	**Graphical Interfaces** 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

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	**Introduction to Big Data Analytics & Data Analytics Lifecycle** Data Structures, Bl 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. Data Analytics Lifecycle Overview Key Roles for a Successful Analytics, Project Background and Overview of Data Analytics Lifecycle	07 08	22-02-2021 04-03-2021	03-03-2021 14-03-2021

2	**Unit- II: Review of Basic Data Analytic Methods Using R** Introduction to R: Graphical User Interfaces, Data Import and Export, Attribute and Data Types, Descriptive Statistics, Exploratory Data Analysis, Visualization Statistical Methods for Evaluation: Hypothesis Testing, Difference of Means, Wilcoxon Rank-SumTest, Type I and Type II Errors, Power and Sample Size, ANOVA.	07 08	15-03-2021 26-03-2021	25-03-2021 07-04-2021
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, Overview of the Method, Determining the Number of Clusters, Diagnostics, Contents, Reasons to Choose and Cautions.	08 07	08-04-2021 18-04-2021	17-04-2021 24-04-2021
4	**Unit IV: Advanced Analytical Theory and Methods: Association Rules &Clustering.** Overview of Association, Evaluation of Candidate rules, Applications of	07	25-05-2021	03-05-2021

	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.	08	04-05-2021	15-05-2021

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