KVR GOVT. COLLEGE FOR WOMEN (AUTONOMOUS), KURNOOL. Re-Accredited by NAAC with Grade "A" CHOICE BASED CREDIT SYSTEM (w.e.f.2020-21) I B.Sc (MPCs, MCsDs) COMPUTER SCIENCE Syllabus for I Year – I Semester CORECOURSE-I: PROBLEM SOLVING IN C

No. of hours per week: 04

Max. Marks: 60

UNITI

General Fundamentals: Introduction to computers: Block diagram of a computer, characteristics and limitations of computers, applications of computers, types of computers, computer generations.

Introduction to Algorithms and Programming Languages: Algorithm–Key features of Algorithms, Flow Charts, Programming Languages – Generations of Programming Languages – Structured Programming Language-Design and Implementation of Correct, Efficient and Maintainable Programs.

UNITII

Introduction to C: Introduction – Structure of C Program – Writing the first C Program – Files used in C Program – Compiling and Executing C Programs – Using Comments – Keywords – Identifiers – Basic Data Types in C – Variables – Constants – I/O Statements in C- Operators in C- Programming Examples.

Decision Control and Looping Statements: Introduction to Decision Control Statements– Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement– Goto Statement

UNITIII

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multi dimensional arrays, character handling and strings.

UNITIV

Functions: Introduction– using functions– Function declaration/ prototype–Function definition – Function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive functions.

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures – Structures and Functions– Union – Arrays of Unions Variables – Unions inside Structures– Enumerated Data Types.

UNITV

Pointers:UnderstandingComputerMemory–IntroductiontoPointers–declaringPointerVariables – Pointer Expressions and Pointer Arithmetic – Null Pointers - Passing Arguments to Functions using Pointer – Pointer and Arrays – Memory Allocation in C Programs – Memory Usage – Dynamic Memory Allocation– Drawbacks of Pointers

Files: Introduction to Files–Using Files in C–Reading Data from Files–Writing Data to Files – Detecting the End-of-file – Error Handling during File Operations – Accepting Command Line Arguments.

BOOKS

1. E. Balagurusamy – Programming in ANSIC – Tata Mc Graw-Hill publications.

2. BrainWKernighanandDennisMRitchie-The,,C"Programminglanguage"-Pearsonpublications.

3. AshokNKamthane:ProgrammingwithANSIandTurboC,PearsonEditionPublications.

4. Yashavant Kanetkar- Let Us C"–BPB Publications.

KVR GOVT. COLLEGE FOR WOMEN (AUTONOMOUS), KURNOOL Re-Accredited by NAAC with Grade "A" CHOICE BASED CREDIT SYSTEM (w.e.f. 2020-21) I B.Sc (MCsDs) Data Science Syllabus for I Year – I Semester. Paper I- MATHEMATICS FOR DATA SCIENCE No. of hours per week: 04 Max.Marks: 60

Unit-I

Matrices and Basic Operations, Special structures Matrices and Basic Operations, Interpretation of matrices as linear mappings and some examples. Square Matrices, Determinants Properties of determinants, singular and non-singular matrices, examples, finding an inverse matrix.

Unit-II

Eigen values and Eigenvectors Characteristic Polynomial, Definition of Left/Right Eigen values and Eigenvectors, Caley – Hamilton theorem, singular value Decomposition, Interpretation of Eigen values/vectors.

Unit-III

Linear Systems Definition, applications, solving linear systems, linear inequalities, linear programming.

Unit-IV

Real-valued functions of two or more variables. Definition, examples, simple demos, applications.

Unit-V

Analysis elements Distance, Limits, Continuity, Differentiability, the gradient and the Gaussian. Optimization problems Simple examples, motivation, the role of the Hessian maxima and minima and related extreme conditions. Integration Double integrals, Fubini's theorem, properties, applications.

Text Books:

1. Gilbert Strang, *Linear Algebra and its Applications*. Thomson /Brooks Cole (Available in a Greek Translation).

2. Thomas M. Apostol, Calculus, Wiley, 2nd Edition, 1991 ISBN 960-07-0067-2.

3. Michael Spivak. Calculus, publish or Perish, 2008, ISBN 978-0914098911.

4. Ross L. Finney, Maurice D.Weir . and Frank R. Giordano. Thomas's Calculus, Pearson 12th Edition 2009.

5. David C. Lay, Linear Algebra and Its Applications, 4th Editoin.

6. Yourself saad, Iterative Methods for spare Linear Systems.

KVR GOVT. COLLEGE FOR WOMEN (AUTONOMOUS), KURNOOL. Re-Accredited by NAAC with Grade "A" CHOICE BASED CREDIT SYSTEM (w.e.f. 2020-21) I BAAE, B.COM (CA & DM) I SEMESTER Syllabus for I Year – I Semester. CORE COURSE-I: INFORMATION TECHNOLOGY No. of hours per week: 03 Max. Marks: 60

Unit-I – **Introduction to computers:** Definition and applications of Computers, History and Generations of Computer, Characteristics and limitations of Computer, Classification of computers, Block diagram of Computer, Input and output devices, Memory Deivces- RAM, ROM-types, Cache memory, Storage devices-Magnetic tapes, Hard disks, Optical disks - types, Flash drives.

Unit-II –**Software-** System software-Operating System, Compilers & Interpreters, Application software - Examples, **Windows-**Features, versions, desktop, start menu, control panel and recycle bin. **Networking basics:** Computer Network benefits, types of Networks, LAN topologies, Internet and WWW, Services of Internet, Browsers, URLs, E-Mail concepts – Advantages & Disadvantages of E-mail, Userids, Passwords, Email Addresses.

Unit-III – **MS-Word:** Working with MS-Office 2007 & above, Features of MS-Word, Components of Word window, Creating, editing documents, Formatting font, paragraph, page, creating, saving, opening document, creating tables, Headers & Footers, Bullets & numbering, Creating Macros, Mail merge.

Unit-IV – **MS-Excel:** Understanding Excel basics- Features, Excel window components, Definitions of Worksheet, cell, cell pointer, Editing the worksheet, Insert/Delete rows, columns, Cell referencing, Formatting Cells, copying cells, Formulas and functions, working with charts – Creating and editing charts – Chart types – Sorting and filtering.

Unit-V – **MS-PowerPoint:** Understanding PowerPoint basics, Features, different types of creating presentations, opening, closing presentations, inserting slides, inserting clip arts and pictures, inserting shapes, Slide views, Slide layouts, slide transition effects, Custom animation.

REFERENCE BOOK

1. Fundamentals of Computers" by REEMA THAREJA from OXFORD UNIVERSITY PRESS

2. Microsoft Office 2007 Fundamentals, 1st Edition By Laura Story, Dawna Walls UNIT II, UNIT III, UNIT IV)

3. PC SOFTWARE UNDER WINDOWS by Puneet Kumar And Sushil Bhardwaj From Kalyani Publishers

KVR GOVT. COLLEGE FOR WOMEN (AUTONOMOUS), KURNOOL. Re-Accredited by NAAC with Grade "A" CHOICE BASED CREDIT SYSTEM (w.e.f.2020-21) I B.Sc (MPCs, MCsDs) COMPUTERSCIENCE Syllabus for I Year – II Semester DATA STRUCTURES USING C

No. of hours per week: 04

Max. Marks: 60

UNIT-I:

Introduction to Data Structures: Introduction to the Theory of Data Structures, Data Representation, Abstract Data Types, Data Types, Primitive Data Types, Data Structure and Structured Type, Atomic Type, Difference between Abstract Data Types, Data Types, and Data Structures, Refinement Stages

Principles of Programming and Analysis of Algorithms: Software Engineering, Program Design, Algorithms, Different Approaches to Designing an Algorithm, Complexity, Big 'O' Notation, Algorithm Analysis, Structured Approach to Programming, Recursion, Tips and Techniques for Writing Programs in 'C'

UNIT-II:

Arrays: Introduction to Linear and Non- Linear Data Structures, One- Dimensional Arrays, Array Operations, Two- Dimensional arrays, Multidimensional Arrays, Pointers and Arrays, an Overview of Pointers

Linked Lists: Introduction to Lists and Linked Lists, Dynamic Memory Allocation, Basic Linked List Operations, Doubly Linked List, Circular Linked List, Atomic Linked List, Linked List in Arrays, Linked List versus Arrays

UNIT-III:

Stacks: Introduction to Stacks, Stack as an Abstract Data Type, Representation of Stacks through Arrays, Representation of Stacks through Linked Lists, Applications of Stacks, Stacks and Recursion

Queues: Introduction, Queue as an Abstract data Type, Representation of Queues, Circular Queues, Double Ended Queues- Dequeues, Priority Queues, Application of Queues

UNIT-IV:

Binary Trees: Introduction to Non- Linear Data Structures, Introduction Binary Trees, Types of Trees, Basic Definition of Binary Trees, Properties of Binary Trees, Representation of Binary Trees, Operations on a Binary Search Tree, Binary Tree Traversal, Counting Number of Binary Trees, Applications of Binary Tree

UNIT-V:

Searching and sorting: Sorting – An Introduction, Bubble Sort, Insertion Sort, Merge Sort, Searching – An Introduction, Linear or Sequential Search, Binary Search, Indexed Sequential Search

Graphs: Introduction to Graphs, Terms Associated with Graphs, Sequential Representation of Graphs, Linked Representation of Graphs, Traversal of Graphs, Spanning Trees, Shortest Path, Application of Graphs.

BOOKS:

- 1. "Data Structures using C", ISRD group Second Edition, TMH
- 2. "Data Structures through C", Yashavant Kanetkar, BPB Publications
- 3. "Data Structures Using C" Balagurusamy E.TMH

KVR GOVT. COLLEGE FOR WOMEN (AUTONOMOUS), KURNOOL. Re-Accredited by NAAC with Grade "A" CHOICE BASED CREDIT SYSTEM (w.e.f. 2020-21) I B.Sc(MCsDs) DATA SCIENCE Syllabus for I Year – II Semester. Paper II- INTRODUCTION TO DATA SCIENCE WITH R

Unit-I

Data, Stock Exchange Data, Time Series and Bio logical data) ; data collection. Introduction to the field of data science, different types of data (Data Base data, data Warehouse data, Transaction

Unit-II

Experimental design; data attributes; data cleaning; data characterization and analysis.

Unit-III

Data modeling and mining techniques; model evaluation; visualization; Application of data science, Introduction to R - R Data structures – Help functions in R

Unit-IV

Vectors-Scalars-Declarations- recycling-Common Vector operations – Using all and any Vectorized operations-NA and NULL values – Filtering – Vectorized if- then else-Vector Equality – Vector Element names.

Creating matrices –Matrix operations-Applying Functions to Matrix Rows and Columns – Adding and deleting rows and columns.

Unit-V

Vector /Matrix Distinction –Avoiding Dimension Reduction –Higher Dimensional arrays – lists-Creating lists – General list operations – Accessing list components and values – applying functions to lists –recursive lists. Creating Data Frames – Matrix –like operations in frames –Merging Data Frames – Applying function to Data frames.

BOOKS:

1. Nina Zumel, John Mount, "Practical Data Science with R", Manning Publications, 2014.

2. Jure Leskovec, Anand Rajaraman, Jeffrey D.Ullman, "Mining of Massive Datasets",

Cambridge University Press, 2014.

3.Mark Gardener, "Beginning R - The Statistical Programming Language", John Wiley & Sons, Inc., 2012.

4.W. N. Venables, D. M. Smith and the R Core Team, "An Introduction to R", 2013.

5.Tony Ojeda, Sean Patrick Murphy, Benjamin Bengfort, Abhijit Dasgupta, "Practical Data Science Cookbook", Packt Publishing Ltd., 2014.

6.Nathan Yau, "Visualize This: The FlowingData Guide to Design, Visualization, and Statistics", Wiley, 2011.

7.Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.

KVR GOVT. COLLEGE FOR WOMEN (AUTONOMOUS), KURNOOL. Re-Accredited by NAAC with Grade "A" CHOICE BASED CREDIT SYSTEM (w.e.f. 2020-21) I BAAE, B.COM (CA & DM) II SEMESTER Syllabus for I Year – II Semester. CORE COURSE-I: E-COMMERCE AND WEB DESIGNING No. of hours per week: 03 Max.Marks: 60

Unit-I:Introduction to E-Commerce - Definition, Advantages and disadvantages of E-Commerce, E-Commerce framework, Anatomy of E-Commerce Applications-Multimeida content for E-Commer applications, Multimedia servers & E-Commerce Applications, Client-Server Architecture in E-Commerce.

Unit-II: Electronic Payment Systems- Introduction, Advantages of E-payment system, Digital tokens, Smart cards, Credit cards, Risks in E-payment system. **Introduction to EDI-** benefits of EDI, EDI implementation, Value Added Networks.

Unit-III: Introduction to markup languages – HTML, XML, and DHTML, - HTML basics-Structure of HTML document, Body tag attributes, Heading tags, semantic and syntactics style tags, Anchor tag, Font tag, Image tag and its attributes.

Unit-IV: Advanced HTML: List tags, table tags, frame tags, form tag and its attributes, form input types- **Introduction to CSS** – Advantages, CSS syntax, CSS rules, CSS selectors, Types of style sheets, Layers, creating a new style sheet.

Unit-V: Introduction to Scripting Languages: Javascript – Introduction, difference between java and javascript, variables & literals, datatypes, operators, Control structures, Functions, Using javascript in HTML, Java Script events, Javascript built-in objects, Document Object Model.

Reference books:

- 1. E-Commerce An Indian perspective-6th Edition by P.T.Joseph S.J, PHI Publishers.
- 2. Sams Teach Yourself HTML, CSS And JavaScript All In One Paperback 1, Pearson Eduction of India.

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UNIT-I:

Fundamentals of Internet: What is Internet? Internet applications, Internet Addressing – Entering a WebSite Address, URL–Components of URL, Searching the Internet, Browser –Types of Browsers, Introduction to Social Networking: Twitter, Tumblr, LinkedIn, Facebook, flickr, Skype, yahoo, YouTube, WhatsApp.

UNIT-II:

E-mail: Definition of E-mail -Advantages and Disadvantages –User Ids, Passwords, Email Addresses, Domain Names, Mailers, Message Components, Message Composition, Mail Management.

G-Suite: Google drive, Google documents, Google spread sheets, Google Slides and Google forms.

UNIT-III

Overview of Internet security, E-mail threats and secure E-mail, Viruses and antivirus software, Firewalls, Cryptography, Digital signatures, Copyright issues.

What are GOI digital initiatives in higher education? (SWAYAM, Swayam Prabha, National Academic Depository, National Digital Library of India, E-Sodh-Sindhu, Virtual labs, e-acharya, e-Yantraand NPTEL).

Reference Books:

- 1. In-line/On-line:FundamentalsoftheInternetandtheWorldWideWeb,2/ebyRaymondGreenlaw and Ellen Hepp, Publishers :TMH
- 2. Internettechnologyand Webdesign, ISRDgroup, TMH.
- InformationTechnology– Thebreakingwave,DennisP.Curtin,KimFoley,KunaiSenand Cathleen Morin,TMH.