Dr. V. S. Krishna Govt. Degree College (A)
Visakhapatnam-13

Department of Computer Science

Board of Studies – Syllabus
2019-20

Dr.V.S.Krishna Govt. Degree College (Autonomous), Visakhapatnam
Resolutions/Minutes of the 5th Board of Studies-March 2018

Subject: Computer Science **Department: Computer Science**

In pursuance of conferment of Autonomous status to Dr.V.S.Krishna Govt. Degree College(A), Visakhapatnam by the UGC vide letter No.F22-1/2011(AC) dated 20.07.2011 from Dr. Manju Singh, Joint Secretary, UGC, New Delhi and Proceedings No. C-II (CDC) /Dr.VSK.Govt.College/BOS/2018 dt.10.10.2018 of The Vice-Chancellor, Andhra University, Visakhapatnam, the **5th Board of Studies in Computer Science** Subject is conducted on 10-10-2018 at 10:00 AM with the following members. The Changes will be implemented from 2019-20 academic year onwards.

MEMBER	NAME & DESIGNATION	SIGNATURE
Head of the Department (Chairman)	Dr.CH.V.M.K.Hari	
Faculty Members	Sri D.V.Raghava Swamy Sri R.Venketeswara Rao Sri K.Sandeep Kumar	
Subject Expert (University Nominee)	Prof. P.Srinivasa Rao, Dept of Computer Science and System Engineering, Andhra University.	
Subject Experts (from outside the parent university)	Dr.A.Siva Prasad Lecturer in Computer Science, GDC, Tekkali	
	Smt. I. Sri Lakshmi Lecturer in Computer Science, GDC (W), Srikakulam	
Representative Member From Industry / Corporate / Allied Area relating to placement		
Member from Alumni	Sri. C. V. S. Ravindranath	
Coordinator, Academic Council	Dr.D. Sravan Kumar	
Chairperson, Academic Council	Dr.V.Chandra Sekhar Principal	

Dr.V.S.Krishna Govt. Degree College (Autonomous), Visakhapatnam
Resolutions/Minutes of the 5th Board of Studies-March 2018

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Dr. V. S. Krishna Govt. Degree College(A) ::Visakhapatnam
B.Sc. Computer Science Syllabus Under CBCS
w.e.f. 2019-20

Semester	Paper	Subject	Hrs.	Credits	IA	ES	Total
FIRST YEAR							
SEMESTER I	I	Computer Fundamentals and Photoshop	4	3	25	75	100
		Photo Shop Lab	2	2	0	50	50
SEMESTER II	II	Programming in C	4	3	25	75	100
		Programming in C Lab	2	2	0	50	50
SECOND YEAR							
SEMESTER III	III	Data Structures	4	3	25	75	100
		Data Structures using C- Lab	2	2	0	50	50
SEMESTER IV	IV	Object Oriented Programming Using Java	4	3	25	75	100
		Object Oriented Programming Using Java Lab	2	2	0	50	50
THIRD YEAR							
SEMESTER V	V	DBMS	3	3	25	75	100
		DBMS Lab	2	2	0	50	50
	VI	Software Engineering	3	3	25	75	100
		Software Engineering Lab	2	2	0	50	50
SEMESTER VI	VII (A/B/ C)	**Elective-I**	3	3	25	75	100
		A. Operating Systems					
		B. Computer Networks					
		C. Web Technologies					
		Lab for Elective –I	2	2	0	50	50
	VIII Cluster-A-1,2,3 or Cluster-B-1,2,3	**Elective-II(cluster A)**					
		1.Foundations of Data Science	3	3	25	75	100
		2.Big Data Technology					
		3.Computing for Data Analytics					
		Project Work	2	2	20	30	50
		Elective-II(cluster B)					
		1. Distributed Systems	3	3	25	75	100
		2. Cloud Computing					
		3. Grid computing					
		Project Work	2	2	20	30	50

I YEAR 1 SEMESTER

Computer Fundamentals & Photoshop

Course Outcome
To explore basic knowledge on computers and Photoshop's beauty from the practical to the painterly artistic and to understand how Photoshop will help you create your own successful images

UNIT-I:
Introduction to computers, characteristics and limitations of computer, Block diagram of computer, types of computers, uses of computers, computer generations. Number systems :binary, hexa and octal numbering system

UNIT-II:
Input and output devices: Keyboard and mouse, inputting data in other ways, Types of Software: system software, Application software, commercial, open source, domain and free ware software, Memories: primary, secondary and cache memory. Windows basics: desktop, start menu, icons.

Unit –III
Introduction to Adobe photoshop, Getting started with photoshop, creating and saving a document in photoshop, page layout and back ground, photoshop program window-title bar,menu bar,option bar,image window,image title bar,status bar,ruler,paletts,tool box,screen modes,saving files,reverting files,closing files.

Unit –IV
Images: working with images, image size and resolution ,image editing,colour modes and adjustments , Zooming & Panning an Image,, , Rulers, Guides & Grids- Cropping & Straightening an Image,image backgrounds ,making selections.
Working with tool box: working with pen tool, save and load selection-working with erasers-working with text and brushes-Colour manipulations: colour modes- Levels – Curves - Seeing Colour accurately - Patch tool – Cropping-Reading your palettes - Dust and scratches- Advanced Retouching- smoothing skin

Unit-V
Layers: Working with layers- layer styles- opacity-adjustment layers
Filters: The filter menu, Working with filters- Editing your photo shoot, presentation –how to create adds ,artstic filter,blur filter,brush store filter,distort filters,noice filters,pixelate filters,light effects,difference clouds,sharpen filters,printing.

Reference Books:

1. Fundamentals of Computers by Reema Thareja from Oxford University Press
2. Adobe Photoshop Class Room in a Book by Adobe Creative Team.
3. Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, Color Grading & Graphic...19 February 2016 by David Maxwell

Student Activity:

1. **Design a poster for technical paper presentation.**
2. **Create a digital scrap book.**

Photo Shop Lab

1. Create your Visiting card
2. Create Cover page for any text book
3. Create a Paper add for advertising of any commercial agency
4. Design a Passport photo
5. Create a Pamphlet for any program to be conducted by an organixation
6. Create Broacher for you college
7. Create Titles for any forthcoming film
8. Custom shapes creation
9. Create a Web template for your college
10. Convert color photo to black and white photo
11. Enhance and reduce the given Image size
12. Background changes
13. Design Box package cover
14. Design Texture and patterns
15. Filter effects & Eraser effects

I YEAR II SEMESTER

Paper-II : PROGRAMMING IN C

Course Objectives

1. Learn how to solve common types of computing problems.
2. Learn data types and control structures of C
3. Learn to map problems to programming features of C.
4. Learn to write good portable C programs.

Course Outcomes

Upon successful completion of the course, a student will be able to:

1. Appreciate and understand the working of a digital computer
2. Analyze a given problem and develop an algorithm to solve the problem
3. Improve upon a solution to a problem
4. Use the 'C' language constructs in the right way
5. Design, develop and test programs written in 'C'

UNIT I

Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms – Some more Algorithms – Flow Charts – Pseudo code – Programming Languages – Generation of Programming Languages – Structured Programming Language.

Introduction to C: Introduction – Structure of C Program – Writing the first C Program – File 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 – Type Conversion and Type Casting

UNIT II

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

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

UNIT III

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array – Calculating the length of the Array – Operations on Array – one dimensional array – Two dimensional Arrays –Operations on Two Dimensional Arrays –

Strings: Introduction – String Operations – Miscellaneous String and Character functions

UNIT IV

Pointers: Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables – Pointer Expressions and Pointer Arithmetic – Null Pointers –Pointer and Arrays – Passing Array to Function – Difference between Array Name and Pointer – Pointers and

Strings – Pointer and 2D Arrays–Memory Allocation in C Programs – Memory Usage – Dynamic Memory Allocation – Drawbacks of Pointers

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures – Structures and Functions – Union

UNIT V

Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data from Files – Detecting the End-of-file – Error Handling during File - Functions for Selecting a Record Randomly - Remove() – Renaming a File – Creating a Temporary File.

REFERENCE BOOKS

1. Introduction to C programming by REEMA THAREJA from OXFORD UNIVERSITY PRESS
2. E Balagurusamy: ―COMPUTING FUNDAMENTALS & C PROGRAMMING – Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.
4. Henry Mullish & Huubert L.Cooper: The Spirit of C An Introduction to modern Programming, Jaico Pub. House,1996.

Student Activity:

1. **Write a program for preparing the attendance particulars of students of your college at the end of semester according to following guidelines**
   a. **Above 75 % promoted**
   b. **Above 65% condoned**
   c. **Below 65% detained**
2. **Write a program for creating timetable or your class taking work load of faculty into consideration.**

PROGRAMMING IN C LAB

1. Find out the given number is perfect number or not using c program.
2. Write a C program to check whether the given number is Armstrong or not.
3. Write a C program to find the sum of individual digits of a positive integer.
4. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to print the Fibonacci series
5. Write a C program to generate the first n terms of the Fibonacci sequence.
6. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
7. Write a C program to find both the largest and smallest number in a list of integers.
8. Write a C program that uses functions to perform the following:
    a. Addition of Two Matrices
    b. Multiplication of Two Matrices
9. Write a program to perform various string operations
10. Write C program that implements searching of given item in a given list
11. Write a C program to sort a given list of integers in ascending order

II YEAR III SEMESTER

Paper-III : DATA STRUCTURES

Course Objectives

To introduce the fundamental concept of data structures and to emphasize the importance of data structures in developing and implementing efficient algorithms..

Course Outcomes

After completing this course satisfactorily, a student will be able to:

1. Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms
2. Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs.
3. Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs
4. Demonstrate different methods for traversing trees
5. Compare alternative implementations of data structures with respect to performance
6. Compare and contrast the benefits of dynamic and static data structures implementations
7. Describe the concept of recursion, give examples of its use, describe how it can be implemented using a stack .
8. Discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing.

UNIT I

Concept of Abstract Data Types (ADTs)- Data Types, Data Structures, Storage Structures, and File Structures, Primitive and Non-primitive Data Structures, Linear and Non-linear Data Structures.

Linear Lists – ADT, Array and Linked representations, Pointers.

Arrays – ADT, Mappings, Representations, Sparse Matrices, Sets – ADT, Operations

Linked Lists: Single Linked List, Double Linked List, Circular Linked List , applications

UNIT II

Stacks: Definition, ADT, Array and Linked representations, Implementations and Applications

Queues: Definition, ADT, Array and Linked representations of Queue, Circular Queues, Implementations and Applications.

UNIT III

Trees: Binary Tree, Definition, Properties, ADT, Array and Linked representations, Implementations and Applications. Binary Search Trees (BST) – Definition, ADT, Operations and Implementations, BST Applications.

UNIT IV

Graphs – Graph and its Representation, Graph Traversals, Connected Components, Basic Searching Techniques, Minimal Spanning Trees

UNIT- V

Sorting and Searching: Selection, Insertion, Bubble, Merge, Quick, Heap sort, Sequential and Binary Searching.

REFERENCE BOOKS

1. D S Malik, Data Structures Using C++, Thomson, India Edition 2006.
2. Sahni S, Data Structures, Algorithms and Applications in C++, McGraw-Hill, 2002.
3. SamantaD, Classic Data Structures, Prentice-Hall of India, 2001.
4. Heilman G I,. Data Structures and Algorithms with Object-Oriented Programming, Tata McGraw-l lill. 2002. (Chapters I and 14).
5. Tremblay P, and Sorenson P G, Introduction to Data Structures with Applications, Tata McGraw-Hill,

Student activity:

1. **Create a visible stack using C-graphics**
2. **Create a visible Queue using C-graphics**

DATA STRUCTURES USING C LAB

1. Write a Program to implement the Linked List operations
2. Write a Program to implement the Stack operations using an array.
3. Write Programs to implement the Queue operations using an array.
4. Write Programs to implement the Stack operations using a singly linked list.
5. Write Programs to implement the Queue operations using a singly linked list.
6. Write a program for arithmetic expression evaluation
7. Write a program to implement Double Ended Queue using a doubly linked list.
8. Write a program to search an item in a given list using Linear Search and Binary Search
9. Write a program for Quick Sort
10. Write a program for Merge Sort
11. Write a program on Binary Search Tree operations(insertion, deletion and traversals)
12. Write a program for Graph traversals

II YEAR IV SEMESTER

Paper-IV : OBJECT ORIENTED PROGRAMMING USING JAVA

Course Objectives

As the business environment becomes more sophisticated, the software development (software engineering is about managing complexity) is becoming increasingly complex. As of the best programming paradigm which helps to eliminate complexity of large projects, Object Oriented Programming (OOP) has become the predominant technique for writing software in the past decade. Many other important software development techniques are based upon the fundamental ideas captured by object-oriented programming.

Course Outcomes

At the end of this course student will:

1. Understand the concept and underlying principles of Object-Oriented Programming
2. Understand how object-oriented concepts are incorporated into the Java programming language
3. Develop problem-solving and programming skills using OOP concept
4. Understand the benefits of a well structured program
5. Develop the ability to solve real-world problems through software development in high-level programming language like Java
6. Develop efficient Java applets and applications using OOP concept
7. Become familiar with the fundamentals and acquire programming skills in the Java language.

UNIT-1

FUNDAMENTALS OF OBJECT – ORIENTED PROGRAMMING : Introduction, Object Oriented paradigm, Basic Concepts of OOP, Benefits of OOP, Applications of OOP, Java features: **OVERVIEW OF JAVA LANGUAGE**: Introduction, Simple Java program structure, Java tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments. **CONSTANTS, VARIABLES & DATA TYPES:** Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Value to Variables, Scope of variables, Symbolic Constants, Type casting, Getting Value of Variables, Standard Default values; **OPERATORS & EXPRESSIONS**.

UNIT-II

DECISION MAKING & BRANCHING: Introduction, Decision making with if statement, Simple if statement, if. Else statement, Nesting of if. else statements, the else if ladder, the switch statement, the conditional operator. **LOOPING**: Introduction, The While statement, the do-while statement, the for statement, Jumps in loops.

CLASSES, OBJECTS & METHODS: Introduction, Defining a class, Adding variables, Adding methods, Creating objects, Accessing class members, Constructors, Method overloading, Static members,

UNIT-III

INHERITANCE: Extending a class, Overloading methods, Final variables and methods, Final classes, Abstract methods and classes;

ARRAYS, STRINGS: Arrays, One-dimensional arrays, Creating an array, Two – dimensional arrays, Strings;

INTERFACES: MULTIPLE INHERITANCE: Introduction, Defining interfaces, Extending interfaces, Implementing interfaces, Assessing interface variables;

UNIT-IV

MULTITHREADED PROGRAMMING: Introduction, Creating Threads, Extending the Threads, Stopping and Blocking a Thread, Lifecycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the 'Runnable' Interface.

MANAGING ERRORS AND EXCEPTIONS: Types of errors : Compile-time errors, Run-time errors, Exceptions, Exception handling, Multiple Catch Statements, Using finally statement,

UNIT-V

APPLET PROGRAMMING: local and remote applets, Applets and Applications, Building Applet code, Applet Life cycle: Initialization state, Running state, Idle or stopped state, Dead state, Display state.

PACKAGES: Introduction, Java API Packages, Using System Packages, Naming conventions, Creating Packages, Accessing a Package, using a Package.

MANAGING INPUT/OUTPUT FILES IN JAVA: Introduction, Concept of Streams, Stream classes, Byte Stream Classes, Input Stream Classes, Output Stream Classes,.

Reference Books:

1. E.Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGraw-Hill Company.
2. John R. Hubbard, Programming with Java, Second Edition, Schaum's outline Series, TATA McGraw-Hill Company.

3. Deitel &Deitel. Java TM: How to Program, PHI (2007)
4. Java Programming: From Problem Analysis to Program Design- D.S Mallik
5. Object Oriented Programming Through Java by P. Radha Krishna, Universities Press (2008)

Student Activity:

1. Create a front end using JAVA for the student database created

2. Learn the difference between ODBC and JDBC

OBJECT ORIENTED PROGRAMMING USING JAVA LAB

1. Write a program to perform various String Operations
2. Write a program on class and object in java
3. Write a program to illustrate Function Overloading & Function Overriding methods in Java
4. Write a program to illustrate the implementation of abstract class
5. Write a program to implement Exception handling
6. Write a program to create packages in Java
7. Write a program on interface in java
8. Write a program to Create Multiple Threads in Java
9. Write a program to Write Applets to draw the various polygons
10. Write a program which illustrates the implementation of multiple Inheritance using interfaces in Java
11. Write a program to assign priorities to threads in java

III YEAR V SEMESTER
Paper-V: Data Base Management System

Course Objective:

Design & develop database for large volumes & varieties of data with optimized data processing techniques.

Course Outcomes

On completing the subject, students will be able to:
1. Design and model of data in database.
2. Store, Retrieve data in database.

UNIT I

Overview of Database Management System: Introduction, file-based system, Drawbacks of file-Based System ,Data and information, Database, Database management System, Objectives of DBMS, Evaluation of Database management System, Classification of Database Management System, DBMS Approach, advantages of DBMS, Data Model, data models, Components and Interfaces of Database Management System. Database Architecture, Situations where DBMS is not Necessary.

UNIT II

Entity-Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity-relationship model (EER model), generalization and specialization.

UNIT III

Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra.

UNIT IV

Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Table Truncation, Imposition of Constraints,

UNIT V

Join Operation, Set Operation, View, Sub Query. Introduction to transaction, recovery and concurrency.

Reference Books

1. "Database System Concepts" by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010, 9780073523323
2. "Database Management Systems" by Raghu Ramakrishnan, McGrawhill, 2002,
3. Fundamentals of Relational Database Management Systems by S. Sumathi, S. Esakkirajan, Springer Publications
4. "An Introduction to Database Systems" by Bipin C Desai
5. "Principles of Database Systems" by J. D. Ullman
6. "Fundamentals of Database Systems" by R. Elmasri and S. Navathe

Student Activity:

1. Create your college database for placement purpose.

2. Create faculty database of your college with their academic performance scores

III YEAR V SEMESTER

DATABASE MANAGEMENT SYSTEMS LAB

1. Draw ER diagrams for train services in a railway station
2. Draw ER diagram for hospital administration
3. Creation of college database and establish relationships between tables
4. Write a view to extract details from two or more tables
5. Write a stored procedure to process students results
6. Write a program to demonstrate a function
7. Write a program to demonstrate blocks, cursors & database triggers.
8. Write a program to demonstrate Joins
9. Write a program d
10. Write a program to demonstrate of Aggregate functions
11. Creation of Reports based on different queries
12. Usage of file locking table locking, facilities in applications.

III YEAR V SEMESTER
Paper VI : Software Engineering

Course Objectives

The Objective of the course is to assist the student in understanding the basic theory of software engineering, and to apply these basic theoretical principles to a group software development project.

Course outcomes

1. Ability to gather and specify requirements of the software projects.
2. Ability to analyze software requirements with existing tools
3. Able to differentiate different testing methodologies
4. Able to understand and apply the basic project management practices in real life projects
5. Ability to work in a team as well as independently on software projects

UNIT I

INTRODUCTION: Software Engineering Process paradigms - Project management - Process and Project Metrics – software estimation - Empirical estimation models - Planning - Risk analysis - Software project scheduling.

UNIT II

REQUIREMENTS ANALYSIS : Requirement Engineering Processes – Feasibility Study – Problem of Requirements – Software Requirement Analysis – Analysis Concepts and Principles – Analysis Process – Analysis Model

UNIT III

SOFTWARE DESIGN: Software design - Abstraction - Modularity - Software Architecture - Effective modular design - Cohesion and Coupling - Architectural design and Procedural design - Data flow oriented design.

UNIT IV

USER INTERFACE DESIGN AND REAL TIME SYSTEMS : User interface design - Human factors - Human computer interaction - Human - Computer Interface design - Interface design - Interface standards.

UNIT V

SOFTWARE QUALITY AND TESTING : Software Quality Assurance - Quality metrics - Software Reliability - Software testing - Path testing – Control Structures testing - Black Box testing - Integration, Validation and system testing - Reverse Engineering and Re-engineering.

REFERENCE BOOKS:

1. Roger Pressman S., "Software Engineering: A Practitioner's Approach", 7th Edition, McGraw Hill, 2010.
2. Software Engineering Principles and Practice by Deepak Jain Oxford University Press
2. Sommerville, "Software Engineering", Eighth Edition, Pearson Education, 2007
3. Pfleeger, "Software Engineering: Theory & Practice", 3rd Edition, Pearson Education, 2009
4. Carlo Ghazi, Mehdi Jazayari, Dino Mandrioli, "Fundamentals of Software Engineering", Pearson Education, 2003

Student Activity:

1. **Visit any financial organization nearby and prepare requirement analysis report**
2. **Visit any industrial organization and prepare risk chart.**

III YEAR V SEMESTER
Software Engineering Lab

1. Studying various phases of Water-Fall Model.
2. Prepare SRS for Banking or On line book store domain problem
3. Using COCOMO model estimate effort for Banking or on line book store domain problem.
4. Calculate effort using FP oriented estimation model
5. Analyze the Risk related to the project and prepare RMMM plan.
6. Develop Time-line chart and project table using PERT or CPM project scheduling methods.
7. Draw E-R diagram, DFD, CFD and STD for the project.
8. Design of the test cases.
9. Prepare FTR. Version control and change control for software configuration item

III YEAR VI SEMESTER

Paper-VII: Elective-A

Operating Systems

Course Objectives

1. To understand the services provided by and the design of an operating system.
2. To understand the structure and organization of the file system.
3. To understand what a process is and how processes are synchronized and scheduled.
4. To understand different approaches to memory management.
5. Students should be able to use system calls for managing processes, memory and the file system.

Course Outcomes

1. Analyze the concepts of processes in operating system and illustration of the scheduling of processor for a given problem instance.
2. Identify the dead lock situation and provide appropriate solution so that protection and security of the operating system is also maintained.
3. Analyze memory management techniques, concepts of virtual memory and disk scheduling.
4. Understand the implementation of file systems and directories along with the interfacing of IO devices with the operating system.

UNIT - I

Operating System Introduction: Operating Systems Objectives and functions, Computer System Architecture, OS Structure, OS Operations, Evolution of Operating Systems - Simple Batch, Multi programmed, time shared, Parallel, Distributed Systems, Real-Time Systems, Operating System services.

UNIT - II

Process and CPU Scheduling - Process concepts - The Process, Process State, Process Control Block, Threads, Process Scheduling - Scheduling Queues, Schedulers, Context Switch, Preemptive Scheduling, Dispatcher, Scheduling Criteria, Scheduling algorithms,

Process Coordination - Process Synchronization, The Critical section Problem, Synchronization Hardware, Semaphores, and Classic Problems of Synchronization.

UNIT - III

Memory Management and Virtual Memory - Logical & physical Address Space, Swapping, Contiguous Allocation, Paging, Structure of Page Table. Segmentation, Virtual Memory, Demand Paging, Page Replacement Page Replacement Algorithms, Allocation of Frames.

UNIT - IV

File System Interface - The Concept of a File, Access methods, Directory Structure, File System Mounting, File System Structure,

Mass Storage Structure - Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling.

UNIT - V

Deadlocks - System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

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REFERENCES BOOKS:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition.
2. Principles of Operating Systems by Naresh Chauhan, OXFORD University Press
3. Operating systems - Internals and Design Principles, W. Stallings, 6th Edition, Pearson.
4. Modern Operating Systems, Andrew S Tanenbaum 3rd Edition PHI.
5. Operating Systems A concept - based Approach, 2nd Edition, D. M. Dhamdhere, TMH.
6. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition.
7. Operating Systems, A. S. Godbole, 2nd Edition, TMH

Student Activity:

1. Load any new operating system into your computer.

2. Partition the memory in your system

3. Create a semaphore for process synchronization

III YEAR VI SEMESTER

Paper-VII: Elective-B

COMPUTER NETWORKS

Course Objectives

1. To provide an introduction to the fundamental concepts on data communication and the design of computer networks.
2. To get familiarized with the basic protocols of computer networks.

Course Outcomes

After this course, the student will be able to

1. Identify the different components in a Communication System and their respective roles.
2. Describe the technical issues related to the local Area Networks
3. Identify the common technologies available in establishing LAN infrastructure.

UNIT – I

Introduction: Uses of Computer Networks, Network Hardware, Network Software, Reference Models, Example Networks.

The Physical Layer: The Theoretical Basis for Data Communication, Guided Transmission Media, Wireless transmission, the public switched telephone network

UNIT – II

The Data Link Layer: Data Link Layer Design Issues, Error Detection and Correction, Sliding Window Protocols.

The Medium Access Control Sub-layer: The channel allocation problem, **Multiple Access Protocols**, **Ethernet,** Data Link Layer Switching.

UNIT – III

The Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion control algorithms, Quality of Service.

UNIT – IV:

The Transport Layer: The Transport Service, Elements of Transport Protocols, The Internet Transport Protocols, The Internet Transport Protocols: TCP.

UNIT – V:

The Application Layer: DNS – The Domain Name System, Electronic Mail, The World Wide Web.

Reference Books:

1. Andrew S. Tanenbaum, "Computer Networks", Fifth Edition, Pearson Education.
2. Bhushan Trivedi, Computer Networks , Oxford University Press
3. James F.Kurose, Keith W.Ross, "Computer Networking", Third Edition, Pearson Education
4. Behrouz A Forouzan, "Data Communications and Networking", Fourth Edition, TMH (2007).
5. Kurose & Ross, "***COMPUTER NETWORKS***" – A Top-down approach featuring the Internet", Pearson Education – Alberto Leon – Garciak.

Student Activity:

1. **Study the functioning of network devices available in your organization .**
2. **Prepare a pictorial chart of LAN connections in your organization**

III YEAR VI SEMESTER
Paper-VII : Elective-C
Web Technologies

Course Objective

- To provide knowledge on web architecture, web services, client side and server side scripting technologies to focus on the development of web-based information systems and web services.
- To provide skills to design interactive and dynamic web sites.

Course Outcome

1. To understand the web architecture and web services.
2. To practice latest web technologies and tools by conducting experiments.
3. To design interactive web pages using HTML and Style sheets.
4. To study the framework and building blocks of .NET Integrated Development Environment.
5. To provide solutions by identifying and formulating IT related problems.

Unit I

Introduction to XHTML , Cascading Style Sheets (CSS) ,JavaScript: Introduction to Scripting ,Control Statements, Functions ,Arrays ,Objects

Unit II

Dynamic HTML: Object Model and Collections , Dynamic HTML: Event Model

Unit III

XML Representing Web Data, XSL Related Technologies and Case Study

Unit IV

Building Ajax-Enabled Web Applications, Web Servers (IIS and Apache)

Ruby and Ruby on Rails

Unit V

Java Server Faces Web Applications, Web Services

References:

1. Harvey M. Deitel and Paul J. Deitel, **"Internet & World Wide Web How to Program", 4/e,** Pearson Education.

2. Uttam Kumar Roy, Web Technologies from Oxford University Press

3. Jason Cranford Teague "**Visual Quick Start Guide CSS, DHTML & AJAX", 4e**, "Pearson Education.
4. Tom Nerino Doli smith **"JavaScript & AJAX for the web"** Pearson Education 2007.
5. Joshua Elchorn **"Understanding AJAX"** Prentice Hall 2006.
6. Hal Fulton **"The Ruby Way", 2e,** Pearson Education 2007.
7. David A. Black **"Ruby for rails"** Dreamtech Press 2006.
8. Bill Dudney, Johathan lehr, Bill Willies, Lery Mattingly **"Mastering Java Server Faces"** Wiely India 2006.

Student Activities:

1. **Prepare a web site for your college**
2. **Prepare your personal website**

III YEAR VI SEMESTER
(Cluster 1) Paper-VIII: Elective –A-1
Foundations of Data Science

Course Objectives

Modern scientific, engineering, and business applications are increasingly dependent on data, existing traditional data analysis technologies were not designed for the complexity of the modern world. Data Science has emerged as a new, exciting, and fast-paced discipline that explores novel statistical, algorithmic, and implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.

Course Outcomes

1. Able to apply fundamental algorithmic ideas to process data.
2. Learn to apply hypotheses and data into actionable predictions.
3. Document and transfer the results and effectively communicate the findings using visualization techniques.

UNIT I

INTRODUCTION TO DATA SCIENCE : Data science process – roles, stages in data science project – working with data from files – working with relational databases – exploring data – managing data – cleaning and sampling for modeling and validation – introduction to NoSQL.

UNIT II

MODELING METHODS : Choosing and evaluating models – mapping problems to machine learning, evaluating clustering models, validating models – cluster analysis – K-means algorithm, Naïve Bayes – Memorization Methods – Linear and logistic regression – unsupervised methods.

UNIT III

INTRODUCTION TO R Language: Reading and getting data into R – ordered and unordered factors – arrays and matrices – lists and data frames – reading data from files – probability distributions – statistical models in R - manipulating objects – data distribution.

UNIT IV

MAP REDUCE: Introduction – distributed file system – algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce – Hadoop - Understanding the Map Reduce architecture - Writing Hadoop Map Reduce Programs - Loading data into HDFS - Executing the Map phase - Shuffling and sorting - Reducing phase execution.

UNIT V

DELIVERING RESULTS : Documentation and deployment – producing effective presentations– Introduction to graphical analysis – plot() function – displaying multivariate data – matrix plots – multiple plots in one window - exporting graph - using graphics parameters. Case studies.

Reference 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.

Student Activity:

1. **Collect data from any real time system and create clusters using any clustering algorithm**
2. **Read the student exam data in R perform statistical analysis on data and print results.**

III YEAR VI SEMESTER
(Cluster 1) Paper-VIII : Elective –A-2

BIG DATA TECHNOLOGY

Course Objective

The Objective of this course is to provide practical foundation level training that enables immediate and effective participation in big data projects. The course provides grounding in basic and advanced methods to big data technology and tools, including MapReduce and Hadoop and its ecosystem.

Course Outcome

1. Learn tips and tricks for Big Data use cases and solutions.

2. Learn to build and maintain reliable, scalable, distributed systems with Apache Hadoop.

3. Able to apply Hadoop ecosystem components.

UNIT I

INTRODUCTION TO BIG DATA: Introduction – distributed file system – Big Data and its importance, Four V's in bigdata, Drivers for Big data, Big data analytics, Big data applications.

UNIT II

INTRODUCTION HADOOP : Big Data – Apache Hadoop & Hadoop EcoSystem – Moving Data in and out of Hadoop – Understanding inputs and outputs of MapReduce - Data Serialization.

UNIT- III

HADOOP ARCHITECTURE: Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read., NameNode, Secondary NameNode, and DataNode, Hadoop MapReduce paradigm, Map and Reduce tasks, Job, Tasktrackers - Cluster Setup .

UNIT-IV

HADOOP ECOSYSTEM AND YARN : Hadoop ecosystem components - Schedulers - Fair and Capacity, Hadoop 2.0 New Features- NameNode High Availability

UNIT-V

HIVE AND HIVEQL, HBASE:-Hive Architecture and Installation, Comparison with Traditional Database, HiveQL - Querying Data - Sorting And Aggregating, Map Reduce Scripts, Joins & Subqueries, HBase concepts.

Reference Books

1. Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.
2. Chris Eaton, Dirk deroos et al. , "Understanding Big data ", McGraw Hill, 2012.
3. Tom White, "HADOOP: The definitive Guide" , O Reilly 2012.
4. Vignesh Prajapati, "Big Data Analytics with R and Haoop", Packet Publishing 2013.
5. Tom Plunkett, Brian Macdonald et al, "Oracle Big Data Handbook", Oracle Press, 2014.
6. Jy Liebowitz, "Big Data and Business analytics",CRC press, 2013.

Student Activity:

1. Collect real time data and justify how it has become Big Data

2. Reduce the dimensionality of a big data using your own map reducer

III YEAR VI SEMESTER
(Cluster 1 Paper-VIII : Elective –A-3)

COMPUTING FOR DATA ANALYTICS

Course Objectives

The objective of this course is to teach fundamental concepts and tools needed to understand the emerging role of business analytics in Organizations.

Course Outcomes

1. Learn the Big Data in Technology Perspective.
2. Understanding of the statistical procedures most often used by practicing engineers
3. Understand Forecasting methods and apply for business applications.

UNIT – I

DATA ANALYTICS LIFE CYCLE: Introduction to Big data Business Analytics - State of the practice in analytics role of data scientists - Key roles for successful analytic project - Main phases of life cycle - Developing core deliverables for stakeholders.

UNIT – II

STATISTICS Sampling Techniques : Data classification, Tabulation, Frequency and Graphic representation - Measures of central value - Arithmetic mean, Geometric mean, Harmonic mean, Mode, Median, Quartiles, Deciles, Percentile - Measures of variation

UNIT – III

PROBABILITY AND HYPOTHESIS TESTING: Random variable, distributions, two dimensional R.V, joint probability function, marginal density function. Random vectors - Some special probability distribution - Binomial, Poison, Geometric, uniform, exponential, normal, gamma and Erlang. Multivariate normal distribution - Sampling distribution – Estimation - point, confidence – Test of significance, 1& 2 tailed test, uses of t-distribution, F-distribution, χ2distribution.

UNIT – IV

PREDICTIVE ANALYTICS: Predictive modeling and Analysis - Regression Analysis, Multicollinearity , Correlation analysis, Rank correlation coefficient, Multiple correlation, Least square, Curve fitting and good ness of fit.

UNIT – V

TIME SERIES FORECASTING AND DESIGN OF EXPERIMENTS : Forecasting Models for Time series : MA, SES, TS with trend, season - Design of Experiments, one way classification, two way classification, ANOVA, Latin square, Factorial Design.

Reference Books

1. Chris Eaton, Dirk Deroos, Tom Deutsch etal., "Understanding Big Data", McGrawHIll, 2012.
2. Alberto Cordoba , "Understanding the Predictive Analytics Lifecycle", Wiley, 2014.
3. Eric Siegel, Thomas H. Davenport , "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die", Wiley, 2013.
4. James R Evans, "Business Analytics – Methods, Models and Decisions", Pearson 2013.
5. R. N. Prasad, Seema Acharya, "Fundamentals of Business Analytics", Wiley, 2015.
6. S M Ross, "Introduction to Probability and Statistics for Engineers and Scientists", Academic Foundation, 2011.
7. David Hand, Heiki Mannila, Padhria Smyth, "Principles of Data Mining", PHI 2013.
8. Spyros Makridakis, Steven C Wheelwright, Rob J Hyndman, "Forecasting methods and applications", Wiley 2013(Reprint).

Student Activity:

1. **Collect temperatures of previous months and prepare a logic to estimate the temperature of next one week**
2. **Collect real time data and apply statistical techniques to classify it.**

III YEAR VI SEMESTER
(Cluster 2) Paper-VIII : Elective –B-1

Distributed Systems

Course Objectives
- To expose the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission.
- To discuss multiple levels of distributed algorithms, distributed file systems, distributed databases, security and protection.

Course Outcomes
- Create models for distributed systems.
- Apply different techniques learned in the distributed system.

UNIT I
Introduction to Distributed Computing Systems, System Models, and Issues in Designing a Distributed Operating System, Examples of distributed systems.

UNIT II

Features of Message Passing System, Synchronization and Buffering, Introduction to RPC and its models, Transparency of RPC, Implementation Mechanism, Stub Generation and RPC Messages, Server Management.

UNIT III

Introduction, Design and implementation of DSM system, Granularity and Consistency Model, Advantages of DSM, Clock Synchronization, Event Ordering.

UNIT IV

Task Assignment Approach, Load Balancing Approach, Load Sharing Approach, Process Migration and Threads.

UNIT V

File Models, File Accessing Models, File Sharing Semantics, File Caching Schemes, File Replication, Atomic Transactions, Cryptography, Authentication.

Reference Books
1.Pradeep. K. Sinha: " Distributed Operating Systems: Concepts and Design " , PHI, 2007.

2 .George Coulouris, Jean Dollimore, Tim Kindberg: " Distributed Systems" , Concept and Design, 3rd Edition, Pearson Education, 2005.

Student Activity

1. Implementation of Distributed Mutual Exclusion Algorithm.
2. Create a Distributed Simulation Environment.

III YEAR VI SEMESTER
(Cluster 2) Paper-VIII : Elective –B-2

Cloud Computing

Course Objectives:
The student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet, cloud concepts capabilities across the various cloud service models including Iaas, Paas, Saas, and developing cloud based software applications on top of cloud platforms.

Course Outcomes
1. Compare the strengths and limitations of cloud computing
2. Identify the architecture, infrastructure and delivery models of cloud computing
3. Apply suitable virtualization concept.
4. Choose the appropriate cloud player , Programming Models and approach.
5. Address the core issues of cloud computing such as security, privacy and interoperability
6. Design Cloud Services and Set a private cloud

Unit 1

Cloud Computing Overview – Origins of Cloud computing – Cloud components - Essential characteristics – On-demand self-service , Broad network access , Location independent resource pooling

Unit II

Cloud scenarios – Benefits: scalability , simplicity , vendors ,security. Limitations – Sensitive information - Application development

Unit III

Cloud architecture: Cloud delivery model – SPI framework , SPI evolution , SPI vs. traditional IT Model
Software as a Service (SaaS): SaaS service providers – Google App Engine, Salesforce.com and google platfrom – Benefits – Operational benefits - Economic benefits – Evaluating SaaS
Platform as a Service (PaaS): PaaS service providers – Right Scale – Salesforce.com – Rackspace – Force.com .

Unit IV

Infrastructure as a Service (IaaS): IaaS service providers – Amazon EC2 , GoGrid – Microsoft soft implementation and support – Amazon EC service level agreement – Recent developments – Benefits
Cloud deployment model : Public clouds – Private clouds – Community clouds - Hybrid clouds - Advantages of Cloud computing

Unit V

Virtualization: Virtualization and cloud computing - Need of virtualization – cost , administration , fast deployment , reduce infrastructure cost - limitations
Types of hardware virtualization: Full virtualization - partial virtualization - para virtualization
Desktop virtualization: Software virtualization – Memory virtualization - Storage virtualization – Data virtualization – Network virtualization
Microsoft Implementation: Microsoft Hyper V – Vmware features and infrastructure – Virtual Box - Thin client

Reference Books

1. Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter TATA McGraw- Hill , New Delhi - 2010
2. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que 2008
3. Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.
4. Cloud Computing, A Hands on approach, Arshadeep Bahga, Vijay Madisetti, University Press
5. Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christenvecctiola, S Tammarai selvi, TMH

Student Activity:

1. Prepare the list of companies providing cloud services category wise.
2. Create a private cloud using local server

III YEAR VI SEMESTER
(Cluster 2) Paper-VIII : Elective –B-3

Grid Computing

Course Objectives:
The student will learn about the Grid environment, building software systems and components that scale to millions of users in modern internet, Grid concepts capabilities across the various Grid services..

Course Outcomes

1. Compare the strengths and limitations of Grid computing
2. Identify the architecture, infrastructure and delivery models of Grid computing
3. Apply suitable virtualization concept.
4. Address the core issues of Grid computing such as security, privacy and interoperability

UNIT I

CONCEPTS AND ARCHITECTURE :Introduction-Parallel and Distributed Computing-Cluster Computing-Grid Computing- Anatomy and Physiology of Grid- Web Trends, Challenges and applications.

UNIT II

GRID MONITORING :Grid Monitoring Architecture (GMA) - An Overview of Grid Monitoring Systems- R-GMA –Grid ICE – MDS- Service Level Agreements (SLAs)

UNIT III

GRID SECURITY AND RESOURCE MANAGEMENT: Grid Security-A Brief Security Primer-PKI-X509 Certificates-Grid Security-Grid Scheduling and Resource Management, Grid way and Grid bus Broker-principles of Local Schedulers

UNIT IV

DATA MANAGEMENT AND GRID PORTALS :Data Management-Categories and Origins of Structured Data-Data Management Challenges-Architectural Approaches-Collective Data Management Services

UNIT V

GRID MIDDLEWARE: List of globally available Middleware's - Case Studies-Recent version of Globus. Features of Next generation grid.

Reference Books

1. Ian Foster, Carl Kesselman, The Grid 2: Blueprint for a New Computing Infrastructure, Elsevier Series, 2004.
2. Vladimir Silva, Grid Computing for Developers, Charles River Media, January 2006.
3. Parvin Asadzadeh, Rajkumar Buyya, Chun Ling Kei,Deepa Nayar, and Srikumar Venugopal, Global Grids and Software Toolkits: A Study of Four Grid Middleware Technologies, High Performance Computing : Paradigm and Infrastructure, Laurence Yang and Minyi Guo (editor s), Wiley Press, New Jersey, USA, June 2005.
4. Jarek Nabrzyski, Jennifer M. Schopf, Jan Weglarz , Grid Resource Management: State of the Art and Future Trends , (International Series in Operations Research & Management Science), Springer; First edition, 2003

Student Activity:

1. Implement and analyze any one Grid Resource Sharing algorithm.
2. Listout various security issues with Grid

PROJECT & VIVA-VOCE

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

Blue Print for Question paper setting

Course	Computer Fundamentals & Photoshop		
S.No	Chapter Name	4 Marks	8 Mraks
1	Introduction to computers	1	2(a or b)
2	Input and Out put devices	2	2(a or b)
3	Introduction to Adobe photoshop	2	2(a or b)
4	Images, Working with tool box	2	2(a or b)
5	Layers & Filters	1	2(a or b)

Course	Programming in C Language		
S.No	Chapter Name	4 Marks	8 Mraks
1	Programming Languages, Introduction to C	2	2(a or b)
2	Functions	2	2(a or b)
3	Programming in C	2	2(a or b)
4	Pointers and others	1	2(a or b)
5	files	1	2(a or b)

Course	DATA STRUCTURES		
S.No	Chapter Name	4 Marks	8 Mraks
1	Concept of Abstract Data Types(ADTs), Linear Lists, Arrays	2	2(a or b)
2	Stacks, Queues	2	2(a or b)
3	Trees	1	2(a or b)
4	Graphs	1	2(a or b)
5	Sorting and Searching	2	2(a or b)

Course	OBJECT ORIENTED PROGRAMMING USING JAVA		
S.No	Chapter Name	4 Marks	8 Mraks
1	Fundamentals of object- oriented programming	2	2(a or b)
2	Decision making &branching, classes, objucts & methods	2	2(a or b)
3	Inheritance, arrays, strings, interfaces	2	2(a or b)
4	Multithreaded programming , managing errors and exceptions	1	2(a or b)
5	Applet programming, packages, managing input/output files in java	1	2(a or b)

Course	RELATIONAL DATABASE MANAGEMENT SYSTEMS		
S.No	Chapter Name	5 Marks	10 Mraks
1	Overview of Database management System	2	2(a or b)
2	E-R Model	2	2(a or b)
3	Relational Model	1	2(a or b)
4	Strutured Query Language	2	2(a or b)
5	Transaction, Recovery and concurrency	1	2(a or b)

Course	Software Engineering		
S.No	Chapter Name	5 Marks	10 Mraks
1	Introduction: Software Enginering	2	2(a or b)
2	Requirement Analysis	2	2(a or b)
3	software Design	1	2(a or b)
4	User Interface Design& Real Time systems	2	2(a or b)
5	Software Quality and Testing	1	2(a or b)

Course	Operating Systems		
S.No	Chapter Name	5 Marks	10 Mraks
1	OS Introduction	2	2(a or b)
2	Process and CPU Scheduling	2	2(a or b)
3	Memory management & Virtual Memory	2	2(a or b)
4	File System Interface	1	2(a or b)
5	Deadlocks	1	2(a or b)

Course	Computer Networks		
S.No	Chapter Name	5 Marks	10 Mraks
1	Introduction , Physical layer	2	2(a or b)
2	Data Link Layer, MAC sub layer	2	2(a or b)
3	Network layer	2	2(a or b)
4	Transport Layer	1	2(a or b)
5	Application layer	1	2(a or b)

Course	Web Technologies		
S.No	Chapter Name	5 Marks	10 Mraks
1	introduction to XHTML	2	2(a or b)
2	Dynamic HTML	2	2(a or b)
3	XML representing Web Data	2	2(a or b)
4	Building Ajax-Enabled Web Applications	1	2(a or b)
5	Java Server Pages Web Application , Web services	1	2(a or b)

Course	Foundation of Data Sciences		
S.No	Chapter Name	5 Marks	10 Mraks
1	Introduction to Data Science	2	2(a or b)
2	Modeling Methods	2	2(a or b)
3	Introduction to R Language	2	2(a or b)
4	MAP reduce	1	2(a or b)
5	Delivering results	1	2(a or b)

Course	Big Data Technologies		
S.No	Chapter Name	5 Marks	10 Mraks
1	Introduction to Big Data	2	2(a or b)
2	Indroduction HADOOP	2	2(a or b)
3	HADOOP Architecture	2	2(a or b)
4	Hadoop ecosystem and Yarn	1	2(a or b)
5	HIVE and HIVEQL, HBASE	1	2(a or b)

Course	Computing for data analytics		
S.No	Chapter Name	5 Marks	10 Mraks
1	Data Analytics Life Cycle	2	2(a or b)
2	Statstics Sampling Techniques	2	2(a or b)
3	Probability and Hupothesis Testing	2	2(a or b)
4	Predictive Analytics	1	2(a or b)
5	Time Series forecasting and Design of Experments	1	2(a or b)

Course	Distributed Systems		
S.No	Chapter Name	5 Marks	10 Mraks
1	Introduction to Distributed Computing System	2	2(a or b)
2	Features of Message Passing System	2	2(a or b)
3	Introduction, design and implementation of DSM system	2	2(a or b)
4	Task Assigment Approach	1	2(a or b)
5	File models	1	2(a or b)

Course	Distributed Systems		
S.No	Chapter Name	5 Marks	10 Mraks
1	Cloud Computing Overview	2	2(a or b)
2	Clour Scenarios - benefits	2	2(a or b)
3	Cluod Architecture, SAS, PAS	2	2(a or b)
4	Infrastructure as Service, Cloud deployment model	1	2(a or b)
5	Virtualization, Desktop virtualization, Microsoft Implementaion	1	2(a or b)

Course	Grid Computing		
S.No	Chapter Name	5 Marks	10 Mraks
1	Concepts and architecture	2	2(a or b)
2	Grid Monitoring	2	2(a or b)
3	Grid Security and Resource Management	2	2(a or b)
4	Data management and Grid Portals	1	2(a or b)
5	Grid Middle ware	1	2(a or b)

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FOUNDATION COURSE – 3 w.e.f. 2019-20
INFORMATION & COMMUNICATION TECHNOLOGY –1 (ICT-1)
Computer Fundamentals and Office Tools
B.Sc/B.Com/B.A - I YEAR – Semester-II

Credit: 02 **Max Marks: 100**
Hours: 50 Hrs **External Marks: 60**
Internal Marks: 40

SEMESTER-II

Unit-I:

Basics of Computers: Definition of a Computer - Characteristics and Applications of Computers – Block Diagram of Computer – Classification of Computers - Types of computers based on Size and Functionally – Central Processing Unit – I/O Devices - Input Devices: Keyboard, Mouse and Optical Inputs, Output Devices: Monitor and Printer.

Unit-II:

Memory devices – Primary Memory, Secondary Memory and Cache Memory. Software, Hardware, – Definition and Types of Operating System, Functions of an Operating System – MS-DOS - Internal Command and External Commands, MS Windows – Desktop, Documents, Recycle Bin, Task Bar - Control Pane.

Unit-III:

MS-Word: Features of MS-Word – MS-Word Window Components – Creating, Editing, Formatting and Printing of Documents, Formatting Text, Cut, Copy and Paste options – Headers and Footers – Insert/Draw Tables, Table Auto format –- Page Borders and Shading, Page Numbers – Inserting Clip Arts, Shapes, Word Art ,– Mail Merge.

Unit-IV:

MS-PowerPoint -Features of PowerPoint – Creating a Presentation- Inserting and Deleting Slides in a Presentation, Views in power point– Adding Clip Art/Shapes/Pictures - Resizing and Reposition of an Object – Custom Animation.

Unit-V:

MS-Excel - Overview of Excel features and parts – Creating a new worksheet, Selecting cells, Entering and editing Text, Numbers, Formulae, Referencing cells – Inserting Rows/Columns –Changing column widths and row heights, Auto fill features , Font options, Excel functions and Excel charts.

Reference Books:

1. Fundamentals of Computers by ReemaThareja, Publishers: Oxford University Press, India
2. Fundamentals of Computers by V.Raja Raman, Publishers: PHI
3. Microsoft Office 2010 Bible by John Walkenbach, Herb Tyson, Michael R.Groh and Faithe Wempen, Publishers: Wiley

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VISAKHAPATNAM

FOUNDATION COURSE – 5, w.e.f. 2019-20
INFORMATION & COMMUNICATION TECHNOLOGY –2 (ICT-2)
Internet Fundamentals and Web Tools
B.Sc/B.Com/B.A - II YEAR – Semester-III SYLLABUS

Credit: 02 **Max Marks: 100**
Hours: 50 Hrs **External Marks: 60**
Internal Marks: 40

SEMESTER-III

Unit-I :

Fundamentals of Internet: Networking Concepts, Data Communication – Types of Networking, Network topologies, Internet and its Services, – Computer Virus and its types – Types of Browsers.

Unit-II:

Internet applications: Internet Applications - Using Internet Explorer, Standard Internet Explorer Buttons, Entering a Web Site Address, Searching the Internet – Introduction to Social Networking: Twitter, Face book, Yahoo, Google, YouTube, WhatsApp, etc.

Unit-III:

E-mail: Definition of E-mail - Advantages and Disadvantages – UserIds, Passwords, Email Addresses, Mailers, Message Components, Message Composition, Mail Management, Email Inner Workings.

Unit-IV:

WWW- Web Applications, Web Terminologies, Web Browsers, URL – Components of URL, Searching WWW – Search Engines and Examples

Unit-V:

Basic HTML: Basic HTML – Structure of a HTML Document – HTML, Head and Body tags – Semantic and Syntactic Tags – HR, Heading, Font, Image, color and background Tags – Different types of Lists using tags – Table Tags, Image formats – Creation of simple HTML Documents.

Reference Books:

1. In-line/On-line: Fundamentals of the Internet and the World Wide Web, 2/e - by Raymond Greenlaw and Ellen Hepp, Publishers: TMH

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(NAAC Accredited B++ Grade Institution)
VISAKHAPATNAM

BLUE PRINT FOR QUESTION PAPER SETTER FOR ALL

B.Sc/B.Com/B.A - I YEAR SYLLABUS , w.e.f.- 2019-20

Foundation Course – III: Information & Communication Technology –1 (ICT-1)
Model Question Paper: Computer Fundamentals and Office Tools
Semester - II

Internal Marks for 40 Marks

Consisting of **20** Marks for Lab work and **20** Marks for Internal Test. (Best out of 2)

Semester 60 Marks

Semester end Exam for 60 Marks consisting of 2 sections namely A, B.

Section A (5 X 8M = 40Marks)

5 Essay type questions (of either or choice) with **8** Marks each, totaling to **40** Marks

Section B (5 X 4M = 20Marks)

Consisting of any **5** questions out of **8**, with **4** Marks each, totaling to **20** Marks

Note:

Since All questions are selected from all the modules each module carries 1/4 th of total marks allotted for that course.

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(NAAC Accredited B Grade Institution)
B.Sc/B.Com/B.A - I YEAR SYLLABUS I YEAR SYLLABUS , w.e.f.- 2019-20

Foundation Course – III: Information & Communication Technology –1 (ICT-1)
Model Question Paper: Computer Fundamentals and Office Tools
Semester - II

BLUE PRINT FOR QUESTION PAPER SETTER FOR FOUNDATION COURSE(ICT-1)

S.No. of Modules	Short Questions (4M)	Long Questions (8M)	Total No. of Questions
Unit-I	2	2	4
Unit-II	2	2	4
Unit-III	2	2	4
Unit-IV	1	2	4
Unit-V	1	2	4
Total Marks	32	80	112

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VISAKHAPATNAM

BLUE PRINT FOR QUESTION PAPER SETTER FOR ALL

B.Sc/B.Com/B.A - II YEAR SYLLABUS I YEAR SYLLABUS , w.e.f.- 2019-20

Foundation Course – V: Information & Communication Technology –2 (ICT-2)
Model Question Paper: Internet Fundamentals and Web Tools
Semester - III

Internal Marks for 40 Marks

Consisting of **20** Marks for Lab work and **20** Marks for Internal Test. (Best out of 2)

Semester 60 Marks

Semester end Exam for 60 Marks consisting of 2 sections namely A, B.

Section A (5 X 8M = 40Marks)

5 Essay type questions (of either or choice) with **8** Marks each, totaling to **40** Marks

Section B (5 X 4M = 20Marks)

Consisting of any **5** questions out of **8**, with **4** Marks each, totaling to **20** Marks

Note:

Since All questions are selected from all the modules each module carries 1/4 th of total marks allotted for that course.

Dr.V.S.KRISHNA GOVT.DEGREE COLLEGE (AUTONOMOUS), VISAKHAPATNAM
(NAAC Accredited B Grade Institution)
B.Sc/B.Com/B.A - II YEAR SYLLABUS I YEAR SYLLABUS , w.e.f.- 2019-20

Foundation Course – V: Information & Communication Technology – 2(ICT-2)
Model Question Paper: Internet Fundamentals and Web Tools
Semester - III

BLUE PRINT FOR QUESTION PAPER SETTER FOR FOUNDATION COURSE(ICT-2)

S.No. of Modules	Short Questions (4M)	Long Questions (8M)	Total No. of Questions
Unit-I	2	2	4
Unit-II	2	2	4
Unit-III	2	2	4
Unit-IV	1	2	4
Unit-V	1	2	2
Total Marks	32	80	112

DR.V.S.KRISHNA GOVT. DEGREE COLLEGE (A), VISAKHAPATNAM

Model Question Paper – w.e.f. 2019-20, Semester – II

Foundation Course – III: Information & Communication Technology –1 (ICT-1)

Computer Fundamentals and Office Tools

(1st year B.A/B.COM/B.Sc.)

Time: 3Hrs Max. Marks: 60M

Section –A (Answer ALL questions) 5 X 8M=40M

1.a) Explain Briefly about Classification of Computers?

వివిధ రకములయిన కంప్యూటర్స్ గురించి క్లుప్తంగా వివరించండి ?

(Or)

b) Discuss in brief about keyboard and mouse with diagrams?

కీబోర్డ్ మరియు మౌస్ లను గురించి బొమ్మలతోసహా వివరించండి?

2.a) What is Operating Systems? Explain various types of operating systems

ఆపరేటింగ్ సిస్టమ్స్ అనగానేమి?వివిధ రకములయిన ఆపరేటింగ్ సిస్టమ్స్ గురించి వ్రాయండి?

(Or)

b) Explain five Internal and five External Commands with syntax in MS- DOS?

యమ్.ఎస్. దోస్ లో గల 5 ఇంటర్నల్ మరియు 5 ఎక్స్టనల్ కమాండ్స్ వాటి సింటాక్స్ లతో వివరించండి

3.a) Explain the Features and Parts with the help of the diagram in M.S Word?

యమ్.ఎస్ వర్డ్ యొక్క ఉపయోగాలను మరియు బాగాలను గురించి బొమ్మతోసహా వివరించండి?

(Or)

b) How to create basic Header and Footer in M.S-Word? Explain.

యమ్.స్ వర్డ్ లో సాదారణ హెడర్ మరియు ఫూటర్ లను తయారుచేయటం అలగో వివరించండి?

4.a) What are the various Views in M.S-Power point? Explain.

యమ్.స్ పవర్ పాయింట్ లో ఉన్న వివిధ రకములయిన వ్యూస్ గురించి వివరించండి?

(Or)

b) Explain the uses of Clip Art and shapes? How to use in Power Point presentations?

క్లిప్ ఆర్ట్స్ మరియు షేపెస్ ఉపయోగాలను రాసి ? దానిని పవర్ పాయింట్ లో ఎలా ఉపయోగిస్తమో వివరించండి?

5.a) Explain the parts of Worksheet with the help of the diagram?

బొమ్మ గీసి తద్వారా వర్క్ షీట్ యుక్క వివిధ బాగాలను వివరించండి?

(Or)

b) Explain various categories of Excel functions with Examples?

యమ్.స్ ఎక్సెల్ లో ఉన్న వివిద రకములైన ఫంక్షన్స్ గురుంచి ఉదాహరణలతో వివరించండి ?

Section –B (Answer any FIVE questions) 5 X 4M=20M

6. What are the Characteristics of Computer?

కంప్యూటర్ లోని లక్షణాలను గురించి వివరించండి?

7. What are the common types of Monitors? Explain.

మోనిటర్ నందు గల సాదారణ రకములను గురించి వివరించండి?

8. What is Cache memory? Explain.

కాష్ మెమరీ అనగానేమి? వివరించండి?

9. What is Software? How it classified?

సాఫ్ట్ వేర్ అనగానేమి? వాటిని ఏవిదంగా వర్గీకరించారు?

10. Explain Cut, Copy and Paste options?

కట్, కాపీ మరియు పేస్టు లను గురించి వివరించండి?

11. Explain about character formatting in Word?

యమ్.ఎస్ వర్డ్ నందు క్యారెక్టర్ ఫార్మేట్ గురించి వివరించండి?

12. Explain how Insert and Delete slides in M.S Power point?

యమ్.ఎస్ పవర్ పాయింట్ లో స్లైడ్స్ ను జతపరుచుట మరియు తొలగించుట ఎలాగో వివరించండి?

13. Explain Auto fill features of MS-Excel?

యమ్.ఎస్. ఎక్సెల్ లో ఆటో ఫిల్ ఫీచర్ వల్ల ఉపయోగాలను వివరించండి?

Model Question Paper – w.e.f. 2019-20, Semester – III

Foundation Course – V : Information & Communication Technology –2 (ICT-2)

Internet Fundamentals and Web Tools

(2nd year B.A/B.COM/ B.Sc)

Time: 3Hrs **Max. Marks: 60M**

Section –A (Answer ALL questions) **5 X 8M=40M**

1. a) What is Network? Explain various types of Networks Topologies

   నెట్ వర్క్ అనగానేమి? వివిధ రకములయిన నెట్ వర్క్ టోపాలజీలను గురించి వ్రాయండి?

   (Or)

   b) What is a Web Browser? Explain the different types of web browsers?

   వెబ్ బ్రౌజరు అనగానేమి? వివిదరకములయిన వెబ్ బ్రౌజరు లను గురించి వివరించండి?

2. a) Explain briefly about Internet Applications?

   ఇంటర్ నెట్ అప్లికేషన్స్ గురించి క్లుప్తంగా వివరించండి?

   (Or)

   b) What is Social Networking? Explain about its advantages and disadvantages

   సోషల్ నెట్ వర్కింగ్ అనగానేమి? వాటివల్ల లాభాలను మరియు నష్టాలను గురించి వివరించండి.

3. a) What is an E-Mail? How it works? What are it advantages.

   ఇ – మెయిల్ అనగానేమి? అది ఎలా పనిచేస్తుంది? దానివల్ల ఉపయోగాలను వివరించండి.

   (Or)

   b) Explain the procedure for composing and sending an E-mail?

   ఇ – మెయిల్ ను జతచేయటం మరియు పంపడం గురించి వివరించండి?

4. a) What is WWW? Explain the procedure for searching in web sites by using WWW.

   WWW అనగానేమి? వెబ్ సైట్స్ ను వెతకతంలో WWW యొక్క ప్రొసీజర్ ను వివరించండి?

   (Or)

   b) What is Search engine? Explain different types of search engines.

   సెర్చ్ ఇంజిస్ అనగానేమి? సెర్చ్ ఇంజిస్ గల రకములను వివరించండి?

5. a) What is HTML? Create a simple web page using HTML tags.

హెచ్ టి ఎమ్ ల్ అనగానేమి? హెచ్ టి ఎమ్ ల్ టాగ్స్ ఉపయోగించి సింపుల్ వెబ్ పేజి లేను తయారుచేయండి.

(Or)

b) Discuss about Font, Image, color and background tags in HTML with examples?

హెచ్ టి ఎమ్ ల్ గల ఫాంట్, ఇమేజ్, కలర్ మరియు బ్యాక్ గ్రౌండ్ టాగ్స్ గురించి ఉదాహరణలుతో వివరించండి.

Section –B (Answer any FIVE questions) 5 X 4M=20M

6. Explain various types of Networks?

   నెట్ వర్క్ నందు గల రకములను వివరించండి?

7. What is Virus? Explain

   వైరస్ అనగానేమి? వివరించండి.

8. What is Internet Explorer? Explain.

   ఇంటర్ నెట్ ఎక్ష్ ప్లోరెర్ అనగానేమి? వివరించండి?

9. What is Website? Explain.

   వెబ్ సైట్ అనగానేమి? వివరించండి.

10. How to create user Id in Email?

    ఇ – మెయిల్ లో యూజర్ ఐడి ఎలా తయారుచేస్తమో వివరించండి?

11. What is Message Composition? Explain.

    మెసేజ్ కంపో జేసస్ అనగానేమి? వివరించండి?

12. What is Search engine? Explain different types of search engines.

    సెర్చ్ ఇంజిస్ అనగానేమి? సెర్చ్ ఇంజిస్ గల రకములను వివరించండి?

13. Explain different types of table tags in HTML?

    హెచ్ టి ఎమ్ ల్ లో గల వివిద రకములయిన టేబుల్ టాగ్స్ గురించి వివరించండి?

Board of Studies Resolutions Adopted

The Board of Studies of Department of Computer Science, Dr. V.S. Krishna Govt degree College(A) met on 10-10- 2018 and resolved the following:

Resolved to

1. Implement the Autonomous Education system as per the staff council's proceedings commencing from the academic year 2019-20 for the admitted batch of 1st year degree students of 2019-20 only.
2. To implement guidelines of the academic council.
3. Approve and introduce the newly framed syllabus modified and approved by the Board of Studies (BOS) for the first year 2019-20 Degree course in computer Science and ICT-1& 2.
4. Approve and ratify the first and second semester syllabus of the 1st year Computer Science Degree for the admitted batch of 2019-20. Approved and ratified the 3rd and 4th semester syllabus for the academic year 2020-21. Also approved and ratified the 5th and 6th semester syllabus for the academic year 2021-22.
5. Ratify and introduced new semester mode pattern of exam for students with the following combinations Mathematics, Physics and Computer Science. Further it is approved and ratified the model question papers submitted by the concerned faculty members for all the semesters. The evaluation of internal will be done for 40 Marks(Continuous Assessment) and External assessment is for 60 Marks.
6. Conduct Seminars, Workshops, Symposia, Industry visits etc...
7. Adapt quality based curriculum as per the norms of the NAAC.
8. Encourage the students to join JKC to equip with communication skills and improve their personality development.
9. Encourage students to participate in community centric activities like health programmes and tie –up with reputed organizations.

Approved

Subject Expert
University Nominee

Subject Expert
Affiliated College

Member, BOS,Dept of Computers
Dr VSKrishna Govt Degree College(A)

Member, BOS,Dept of Computers
Dr VSKrishna Govt Degree College(A)