SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA : VIJAYAWADA-10

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

COMPUTER SCIENCE	CGST11	2021-22	B.Sc (C.Sc.C.S)

SEMESTER- I **PROBLEM SOLVING IN C** **Credits: 4**

Total Hours: 60

UNIT I **12 periods**

1.1 General Fundamentals:

1.1.1 Introduction to computers
1.1.2 Block diagram of a computer
1.1.3 Characteristics and limitations of computers
1.1.4 Applications of computers
1.1.5 Types of computers
1.1.6 Computer generations.

1.2 Introduction to Algorithms and Programming Languages:

1.2.1 Algorithm – Key features of Algorithms
1.2.2 Flow Charts
1.2.3 Programming Languages
1.2.4 Generations of Programming Languages
1.2.5 Structured Programming Language
1.2.6 Design and Implementation of Correct, Efficient and Maintainable Programs.

UNIT II **12 periods**

2.1Introduction to C

2.1.1 Introduction
2.1.2 Structure of C Program
2.1.3 Writing the first C Program
2.1.4 File used in C Program
2.1.5 Compiling and Executing C Programs
2.1.6 Using Comments
2.1.7 Keywords
2.1.8 Identifiers
2.1.9 Basic Data Types in C
2.1.10 Variables
2.1.11 Constants
2.1.12 I/O Statements in C
2.1.13 Operators in C
2.1.14 Programming Examples.

2.2 Decision Control and Looping Statements

2.2.1 Introduction to Decision Control Statements
2.2.2 Conditional Branching Statements
2.2.3 Iterative Statements
2.2.4 Nested Loops
2.2.5 Break and Continue Statement
2.2.6 goto Statement.

UNIT III **10 periods**

1.1 **Arrays**

3.1.1 Introduction
3.1.2 Declaration of Arrays
3.1.3 Accessing elements of the Array
3.1.4 Storing Values in Array
3.1.5 Operations on Arrays
3.1.6 One dimensional
3.1.7 Two dimensional and multi-dimensional arrays
3.1.8 Character handling and strings.

UNIT IV **14 periods** **4.1**

Functions

4.1.1 Introduction
4.1.2 using functions
4.1.3 Function declaration/ prototype
4.1.4 Function definition
4.1.5 function call
4.1.6 return statement
4.1.7 Passing parameters
4.1.8 Scope of variables
4.1.9 Storage Classes
4.1.10 Recursive functions.

4.2 Structure, Union, and Enumerated Data Types

4.2.1 Introduction
4.2.2 Nested Structures
4.2.3 Arrays of Structures
4.2.4 Structures and Functions
4.2.5 Union
4.2.6 Arrays of Unions Variables
4.2.7 Unions inside Structures
4.2.8 Enumerated Data Types.

UNIT V **12 periods**

5.1 Pointers

5.1.1 Understanding Computer Memory
5.1.2 Introduction to Pointers
5.1.3 declaring Pointer Variables
5.1.4 Pointer Expressions and Pointer Arithmetic
5.1.5 Null Pointers
5.1.6 Passing Arguments to Functions using Pointer
5.1.7 Pointer and Arrays
5.1.8 Memory Allocation in C Programs
5.1.9 Memory Usage
5.1.10 Dynamic Memory Allocation
5.1.11 Drawbacks of Pointers

5.2 Files

5.2.1 Introduction to Files
5.2.2 Using Files in C
5.2.3 Reading Data from Files
5.2.4 Writing Data to Files
5.2.5 Detecting the End-of-file
5.2.6 Error Handling during File Operations
5.2.7 Accepting Command Line Arguments.

TEXT BOOKS

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.
2. Brain W Kernighan and Dennis M Ritchie - The ‘C’ Programming language” - Pearson publications.

REFERENCE BOOKS

1. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
2. Yashavant Kanetkar - Let Us ‘C’ – BPB Publications.

RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity

B. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Problem-solving exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA : VIJAYAWADA-10

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

COMPUTE SCIENCE	CGSP11	2021- 22	B.Sc. (C.Sc.C.S)

SEMESTER I **PROBLEM SOLVING IN C LAB** **Credits: 1**

Total Hours: 30

Experiments List

Cycle-I

Week 1: Write a C program to check whether the given two numbers are equal, bigger or smaller?

Week 2: Write a C program to perform arithmetic operations using Switch...case?

Week 3:

- Write a program to find the sum of individual digits of a positive integer.
- Write a program to check whether the given number is Armstrong or not.

Week 4: Write a program to generate the first N terms of the Fibonacci sequence.

Week 5: Write a program to find both the largest and smallest number in a list of integer values

Week 6:

- Write a program that uses functions to add two matrices.
- Write a program for multiplication of two n X n matrices.

Week 7: Write a program to demonstrate refection of parameters in swapping of two integer values using Call by Value& Call by Address.

Week 8: Write a program to calculate factorial of given integer value using recursive functions.

Cycle-II

Week 9: Write a program to search an element in a given list of values.

Week 10: Write a program to illustrate pointer arithmetic.

Week 11: Write a program to sort a given list of integers in ascending order.

Week 12:

Write a program to calculate the salaries of all employees using Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary) structure.

a. DA is 30 % of Basic Pay
b. HRA is 15% of Basic Pay
c. Deduction is 10% of (Basic Pay + DA)
d. Gross Salary = Basic Pay + DA+ HRA
e. Net Salary = Gross Salary - Deduction

Week 13: Write a program to perform various string operations.

Week 14: Write a program to read the data character by character from a file.

Week 15: Write a program to create Book (ISBN, Title, Author, Price, Pages, Publisher) structure and store book details in a file and perform the following operations

a. Add book details
b. Search a book details for a given ISBN and display book details, if available
c. Update a book details using ISBN
d. Delete book details for a given ISBN and display list of remaining Books.

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COMPUTER SCIENCE	CGST12	**2021-2022**	**B.Sc. (C.Sc.C.S)**

SEMESTER – I **OPERATING SYSTEMS** **Credits: 4**
Total Hours: 60

Course Objectives:
1. Learn about Overview of Computer hardware.
2. Learn basics about Operating System.
3. Learn about Process and CPU Scheduling
4. Learn about Windows 10 Operating System and its Services.
5. Learn about Windows Server Services like Zone Creation, DHCP and DNS etc.

Course Outcomes
1. Understand the Computer and hardware basics
2. Understand the concept Operating Systems
3. Understand the concepts of process and CPU scheduling
4. Understand and know about Windows 10 OS
5. Understand and know about Windows Server 2012 OS

Unit I :

1. Computer-Hardware Basics **12 periods** **1.1**

Computer Basics**:** Definition of a Computer
- 1.1.1 Characteristics and Applications of Computers
- 1.1.2 Block Diagram of a Digital Computer
- 1.1.3 Classification of Computers based on size and working

1.2 Hardware Basics:
- 1.2.1 Central Processing Unit
- 1.2.2 I/O Devices
- 1.2.3 Memory Devices
- 1.2.4 Secondary storage devices

Unit II: Introduction and Operating System Structure **12 periods**

2.1 OS Introduction: OS Concepts
- 2.1.1 Batch Systems
- 2.1.2 Multi programmed Systems
- 2.1.3 Time sharing Systems
- 2.1.4 Desktop systems
- 2.1.5 Multiprocessor Systems
- 2.1.6 Distributed Systems.

2.2 System Structure:
- 2.2.1 System Components
- 2.2.2 System Calls.

Unit III: Process and CPU Scheduling **12 periods**

3.1 Process: Process concept
- 3.1.1 Process Scheduling
- 3.1.2 Operations on Process
- 3.1.3 Co-operating Processes
- 3.1.4 Inter process Communication

3.2 CPU Scheduling: Basic Concepts
- 3.2.1 Scheduling Criteria

Unit IV: Windows 10 OS **12 periods**

4.1 Introduction: Versions
- 4.1.1 GUI Components

4.1.2 Features.

4.2 Windows 10:

4.2.1 OS Installation
4.2.2 User Management
4.2.3 Disk Management
4.2.4 Security
4.2.5 IP Configuration
4.2.6 File Permissions and Sharing
4.2.7 Backup & Recovery
4.2.8 Devices and Printers

Unit V : Server OS Windows Server 2012 **12 periods**

5.1 Server OS Windows Server 2012

5.1.1 Installation,
5.1.2 Roles and features
5.1.3 Monitoring and managing
5.1.4 File and print services

5.2 Group Policy
5.3 Server Storage Management
5.4 Zone Creation
5.5 Server Scenario
5.6 DNS and DHCP
5.7 ADS scenario.

TEXT BOOK

1. Silberschatz Galving Gange,2008, Operating System Concepts,6th edn, Wiley India (P) Ltd.,New Delhi

REFERENCE BOOKS

1. William Stallings,2000, Operating Systems,2nd edn, PHI Prentice Hall,New Delhi
2. William PanekTylor Wentworth, “Microsoft Windows 10 Administration”, Wiley Publishing, 2010

Web Resources

1. https://www.tutorialspoint.com/computer_fundamentals/index.htm
2. https://www.tutorialspoint.com/operating_system/index.htm
3. https://www.tutorialspoint.com/windows_server_2012/index.htm

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COMPUTER SCIENCE	CGSP12	**2021-2022**	**B.Sc. (C.Sc.C.S)**

SEMESTER – I **Credits: 1**

OPERATING SYSTEMS LAB

COURSE OUTCOMES:

1. Demonstration of client and Server installation
2. Create Server roles
3. Create Group Policy
4. Utilize Server Storage
5. Experiment with DHCP

Exercises

1. Explain the steps to Install the Client OS
2. Explain the Services for File and printer
3. Demonstrate the usage of Devices and Printers
4. Explain the steps to Install the Server OS
5. Demonstrate how to Create server and play roles
6. Zone creation and DHCP in server
7. Explain how to create Group policy Management Console
8. Demonstrate Server Storage Management
9. Explain how to Install Active Directory in Windows Server
10. Explain how to configure DNS in Windows Server

Web References:

https://www.tutorialspoint.com/windows10/index.htm
https://www.tutorialspoint.com/windows_server_2012/index.htm

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COMPUTER SCIENCE	CGST21	2021-2022	B.Sc. (C.Sc.C.S)

SEMESTER – II **DATA STRUCTURES** **Credits: 4**

Total Hours: 60

UNIT – I: **11 Periods**

1.1 Introduction to Data Structures

1.1.1 Introduction to the Theory of Data Structures
1.1.2 Data Representation
1.1.3 Abstract Data Types
1.1.4 Data Types-Primitive Data Types
1.1.5 Data Structure and Structured Type
1.1.6 Atomic Type
1.1.7 Difference between Abstract Data Types
1.1.8 Data Types, and Data Structures
1.1.9 Refinement Stages.

1.2 Principles of Programming and Analysis of Algorithms

1.2.1 Software Engineering
1.2.2 Program Design
1.2.3 Algorithms
1.2.4 Different Approaches to Designing an Algorithm
1.2.5 Complexity, Big 'O' Notation
1.2.6 Algorithm Analysis
1.2.7 Recursion.

UNIT – II: Linked Lists **11 Periods**

2.1 Introduction to Lists and Linked Lists
2.2 Basic Linked List Operations
2.3 Doubly Linked List
2.4 Circular Linked List
2.5 Atomic Linked List
2.6 Linked List in Arrays
2.7 Linked List versus Arrays

UNIT – III **14 Periods**

3.1Stacks

3.1.1 Introduction to Stacks
3.1.2 Stack as an Abstract Data Type
3.1.3 Representation of Stacks through Arrays
3.1.4 Representation of Stacks through Linked Lists
3.1.5 Applications of Stacks
3.1.6 Stacks and Recursion

3.2 Queues

3.2.1 Introduction
3.2.2 Queue as an Abstract data Type
3.2.3 Representation of Queues
3.2.4 Circular Queues
3.2.5 Double Ended Queues- Deques
3.2.6 Priority Queues
3.2.7 Application of Queues

UNIT – IV: **10Periods**

4.1Binary Trees

4.1.1 Introduction to Non- Linear Data Structures
4.1.2 Introduction Binary Trees

4.1.3 Types of Trees
4.1.4 Basic Definition of Binary Trees
4.1.5 Properties of Binary Trees
4.1.6 Representation of Binary Trees

4.2. Operations on a Binary Search Tree
4.2.1 Binary Tree Traversal
4.2.2 Counting Number of nodes in Binary Trees
4.2.3 Applications of Binary Tree

UNIT – V: **14Periods**

5.1. Searching and sorting
5.1.1 Sorting – An Introduction
5.1.2 Bubble Sort
5.1.3 Insertion Sort
5.1.4 Merge Sort

5.2 Searching –An Introduction
5.2.1 Linear or Sequential Search
5.2.2 Binary Search
5.2.3 Indexed Sequential Search

5.3 Graphs
5.3.1 Introduction to Graphs
5.3.2 Terms Associated with Graphs
5.3.3 Sequential Representation of Graphs
5.3.4 Linked Representation of Graphs
5.3.5 Traversal of Graphs
5.3.6 Spanning Trees
5.3.7 Shortest Path
5.3.8 Application of Graphs.

TEXT BOOKS:

- "Data Structures using C", ISRD group Second Edition,TMH
- Data Structures through C", YashavantKanetkar, BPBPublications

REFERENCE BOOKS

- "Data Structures Using C" Balagurusamy E.TMH

RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual andchallenging)
2. Student seminars (on topics of the syllabus and related aspects (individualactivity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups asteams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

B. General

1. Group Discussion
2. Others
1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Programming exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports.
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,

10. Peers and self-assessment, outputs form individual and collaborative work

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COMPUTER SCIENCE	CGSP21	2021-2022	B.Sc. (C.Sc.C.S)

SEMESTER – II **DATA STRUCTURES LAB** **Credits: 1**

Total Hours: 30

Course Outcomes:

1. Implement stacks, queues using arrays and linked lists.
2. Write program for conversion from infix to postfix.
3. Implement different sorting and searching techniques.
4. Construct binary trees and binary search trees.
5. Implement binary tree and Graph traversals.

Lab Experiments List

Cycle - I

Week 1: Write a program to read 'N' numbers of elements into an array and also perform the following operation on an array

- Add an element at the beginning of an array
- Insert an element at given index of array
- Update a element using a values and index
- Delete an existing element

Week 2: Write Program to implement the Stack operations using an array.
Week 3: Write a program using stacks to convert a given infix expression to postfix.
Week 4: Write a program for arithmetic expression evaluation.
Week 5: Write Program to implement the Stack operations using Linked List.
Week 6: Write Program to implement the Queue operations using an array.
Week 7: Write Program to implement the Queue operations using Liked List.
Week 8: Write Program to implement circular Queue operations using an array.

Cycle – II

Week 9: Write a program to implement de-queues.
Week 10: Write a program to implement single linked list.
Week 11: Write a program to implement double linked list.
Week 12: Write a program for Binary Search Tree Traversals.
Week 13: Write a program to search an item in a given list using the following Searching Algorithms

- Linear Search
- Binary Search.

Week 14: Write a program for implementation of the following Sorting Algorithms

- Bubble Sort
- Insertion Sort
- Merge sort

Week 15: Write a program for implementation of the following graph traversals.

- BFS
- DFS

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA : VIJAYAWADA-10
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COMPUTER SCIENCE	CGST22	**2021-2022**	**B.Sc. (C.Sc.C.S)**

SEMESTER – II **Credits – 4**
Total Hours: 60

COMPUTER NETWORKS

Course Objectives:

1. Learn about Network hardware and software
2. Learn basics about Networking.
3. Learn about IP Addressing and Switches
4. Learn about VLAN and Routing Protocols.
5. Learn about Network Monitoring, WLAN, NAT

Course Outcomes

1. Understand about Network hardware and software
2. Understand the concept of Networking
3. Understand the concepts of IP Addressing and Switching
4. Understand and know about VLAN and Routing protocols
5. Understand and know about Network Monitoring, WLAN, NAT

Unit I Introduction **12Periods**

1.1 Applications
1.2 LAN
1.3 WAN
1.4 MAN
1.5 Network Hardware
1.6 Network Software: Protocol Hierarchies
1.7Connection oriented and connectionless services.
1.8 Reference Models:
- 1.8.1 OSI Reference Model
- 1.8.2 TCP/IP Reference Model
- 1.8.3 Comparison of OSI and TCP/IP.

Unit II **10Periods** **2.1**

Network Basics
2.2 Protocols, Topology
2.3 Guided Transmission Media
- 2.3.1 Magnetic Media
- 2.3.2 Twisted Pair
- 2.3.3 Coaxial Cable
- 2.3.4 Fiber Optics

2.4 Wireless Transmission
- 2.4.1 Electromagnetic Spectrum
- 2.4.2 Radio Transmission
- 2.4.3 Microwave Transmission

2.5 Communication Satellites
- 2.5.1 Geostationary,
- 2.5.2 Medium-Earth Orbit
- 2.5.3 Low Earth-orbit Satellites.

Unit III **14Periods**

3.1 IP Addressing Version 4
- 3.1.1 purpose
- 3.1.2 hierarchy
- 3.1.3 Private IP Address

3.2 IP Addressing Version 6
- 3.2.1 Benefits
- 3.2.2 Notation
- 3.2.3 configuration
- 3.2.4 routing
- 3.2.5 migrating to IPV6

3.3 Subnetting
- 3.3.1 basics
- 3.3.2 IP address class and subnet mask
- 3.3.3 VLSMsLayer 2

3.4 Switches
- 3.4.1 purpose
- 3.4.2 functions,
- 3.4.3 managing
- 3.4.4 transmitting

3.5 Controlling network traffic with Cisco Switches
- 3.5.1 Sending, deciding fate of frames and Switching between Half and full duplex

Unit IV **12 Periods**

4.1 Spanning tree protocol: operation flow

4.2 VLAN
- 4.2.1 benefits
- 4.2.2 managing and identifying
- 4.2.3 VLAN trunking

4.3 Network Routing
- 4.3.1 network routes
- 4.3.2 routing protocols
- 4.3.3 decision criteria

4.4 Routing: methods
- 4.4.1 configuration
- 4.4.2 routing protocols

4.5 Routing Information Protocol(RIP)

4.6 Enhanced interior gateway routing protocol(EIGRP)

4.7 Open shortest path first protocol expansion(OSPF)

Unit V **12 Periods**

5.1 Monitoring Networks: purpose
- 5.1.1 going over Air
- 5.1.2 locally and globally Devices

5.2 Sharing Airwaves
- 5.2.1 Modulating the Airwaves

5.3 WLAN Standards, operation modes

5.4 IP Access Lists (IP ACLs)-purpose, types, managing, creating, verifying and troubleshooting

5.5 NAT: purpose, Operational flow, Configuring and managing NAT

Text Books

1. David J.Wetherall, Andrew S.Tanenbaum, "Computer Networks", 5th Edition, Pearson Education, 2012.
2. Behrouz A. Forouzan, "Data Communication and Networking", 4th Edition, Tata McGraw Hill, 2007.

Reference Books

1. SilviuAngelescu, “CCNA Certification All-In-One for Dummies”, Wiley Publishing. Inc.

Online Resources:
https://www.youtube.com/watch?v=-6Uoku-M6oY
https://www.youtube.com/watch?v=xIuBmOufbls
https://www.youtube.com/watch?v=ZhEf7e4kopM
https://www.youtube.com/watch?v=0eKVizvYSUQ

Student Activity

- Assignments (on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
- Student seminars (on topics of the syllabus and related aspects (individual activity))
- Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA : VIJAYAWADA-10
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COMPUTER SCIENCE	CGSP22	**2021-2022**	**B.Sc. (C.Sc.C.S)**

SEMESTER – II **Credits – 1**

COMPUTER NETWORKS LAB

Course Outcomes

1. Demonstration of Cisco packet tracer software
2. Perform Configuration of a Switch
3. Perform Configuration of a Router
4. Demonstration of Routing protocols OSPF, RIP
5. Demonstration of Routing protocol EIGRP

Requirements:

Cisco packet tracer software (Freeware)

Exercises

1. Study of basic network command and Network configuration commands.
2. Perform an Initial Switch Configuration
3. Demonstrate Switch basic commands
4. Performing an Initial Router Configuration
5. Demonstrate Static Routing
6. Demonstrate Dynamic Routing
7. Demonstrate Dynamic Routing protocol OSPF
8. Demonstrate Dynamic Routing protocol RIP
9. Demonstrate Dynamic Routing protocol EIGRP

Student Activity

Installation of Cisco Packet Tracer, Perform Network Operations

Online Resources:

https://www.youtube.com/watch?v=-6Uoku-M6oY
https://www.youtube.com/watch?v=xIuBmOufbls
https://www.youtube.com/watch?v=ZhEf7e4kopM
https://www.youtube.com/watch?v=0eKVizvYSUQ

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA - 520 010

An autonomous college in the jurisdiction of Krishna University, A.P., India

COMPUTER SCIENCE	CSCT11B	2020-21	B.Sc. (MPCS, MECS, MSCS, MSCA, MCCS)

SEMESTER - I **Credits: 4**

PROBLEM SOLVING IN C (NEW SYLLABUS)

Total Hrs : 60

Online - 36 hrs / Offline - 24 hrs

UNIT I: General Fundamentals: **Total - 10 hrs**

1.1 Introduction to computers **offline - 5 hrs**

1.1.1 Block diagram of a computer
1.1.2 Characteristics and limitations of computers
1.1.3 Applications of computer
1.1.4 Types of computers
1.1.5 Computer generations

1.2 Introduction to Algorithms and Programming Languages: **online- 5 hrs**

1.2.1 Algorithm – Key features of Algorithms 1 hr
1.2.2 Flow Charts 1 hr
1.2.3 Programming Languages 1 hr
1.2.4 Generations of Programming Languages 1 hr
1.2.5 Structured Programming Language
1.2.6 Design and Implementation of Correct, Efficient and Maintainable Programs. 1 hr

UNIT II **Total - 15 hrs**

2.1 Introduction to C: **offline - 3 hrs**

2.1.1 Introduction
2.1.2 Structure of C Program
2.1.3 Writing the first C Program
2.1.4 File used in C Program
2.1.5 Compiling and Executing C Programs
2.1.6 Using Comments **online - 6 hrs**
2.1.7 Keywords **1 hr**
2.1.8 Identifiers
2.1.9 Basic Data Types in C **1 hr**
2.1.10 Variables **1 hr**
2.1.11 Constants
2.1.12 I/O Statements in C **1 hr**
2.1.13 Operators in C **2 hr**
2.1.14 Programming Examples.

2.2 Decision Control and Looping Statements: **online - 6 hrs**

2.2.1 Introduction to Decision Control Statements
2.2.2 Conditional Branching Statements **2 hr**
2.2.3 Iterative Statements **2 hr**
2.2.4 Nested Loops
2.2.5 Break and Continue Statement **2 hr**

2.2.6 Go to Statement

UNIT III **Total -8 hrs**

3.1 Arrays: **offline - 6 hrs**

3.1.1 Introduction
3.1.2 Declaration of Arrays
3.1.3 Accessing elements of the Array
3.1.4 Storing Values in Array
3.1.5 Operations on Arrays
3.1.6 One dimensional, Two dimensional and Multi-dimensional arrays
3.1.7 Character handling and strings. **online - 2 hrs**

UNIT IV **Total - 13 hrs**

4.1 Functions:

4.1.1 Introduction **offline - 4 hrs**
4.1.2 Using functions
4.1.3 Function declaration/ prototype
4.1.4 Function definition
4.1.5 Function call
4.1.6 Return statement
4.1.7 Passing parameters **online - 9 hrs**
4.1.8 Scope of variables **1 hr**
4.1.9 Storage Classes **1hr**
4.1.10 Recursive functions. **1hr**

4.2 Structure, Union, and Enumerated Data Types:

4.2.1 Introduction **2hrs**
4.2.2 Nested Structures
4.2.3 Arrays of Structures
4.2.4 Structures and Functions **1 hr**
4.2.5 Union **1 hr**
4.2.6 Arrays of Unions Variables
4.2.7 Unions inside Structures **2hrs**
4.2.8 Enumerated Data Types.

UNIT V **Total - 14 hrs**

5.1 Pointers: **offline - 6 hrs**

5.1.1 Understanding Computer Memory
5.1.2 Introduction to Pointers
5.1.3 Declaring Pointer Variables
5.1.4 Pointer Expressions and Pointer Arithmetic
5.1.5 Null Pointers
5.1.6 Passing Arguments to Functions using Pointer
5.1.7 Pointer and Arrays
5.1.8 Memory Allocation in C Programs **online - 8 hrs**
5.1.9 Memory Usage
5.1.10 Dynamic Memory Allocation **2 hrs**
5.1.11 Drawbacks of Pointers

5.2 Files:

5.2.1 Introduction to Files **1 hr**
5.2.2 Using Files in C
5.2.3 Reading Data from Files **1 hr**
5.2.4 Writing Data to Files
5.2.5 Detecting the End-of-file
5.2.6 Error Handling during File Operations **2 hrs**
5.2.7 Accepting Command Line Arguments.

TEXT BOOKS:

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

REFERENCE BOOKS:

1. Brain W Kernighan and Dennis M Ritchie - The 'C' Programming language" - Pearson publications.
2. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
3. YashavantKanetkar - Let Us 'C' – BPB Publications.

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA - 520 010

An autonomous college in the jurisdiction of Krishna University, A.P., India

COMPUTER SCIENCE	**CSCP11B**	**2020-21**	**B.Sc. (MPCS,MECS,MSCS,MSCA,MCCS)**

PRACTICAL- I

SEMESTER - I **Credits: 1**

PROBLEM SOLVING IN C LAB (NEW SYLLABUS)

LAB PROGRAMES

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer.
3. Write a program to generate the first n terms of the Fibonacci sequence.
4. Write a program to find both the largest and smallest number in a list of integer values
5. Write a program to demonstrate reflection of parameters in swapping of two integer values using **Call by Value & Call by Address**
6. Write a program that uses functions to add two matrices.
7. Write a program to calculate factorial of given integer value using recursive functions
8. Write a program for multiplication of two N x N matrices.
9. Write a program to perform various string operations.
10. Write a program to search an element in a given list of values.
11. Write a program to sort a given list of integers in ascending order.
12. Write a program to calculate the salaries of all employees using ***Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary)*** structure.
    a. DA is 30 % of Basic Pay
    b. HRA is 15% of Basic Pay
    c. Deduction is 10% of (Basic Pay + DA)
    d. Gross Salary = Basic Pay + DA+ HRA
    e. Net Salary = Gross Salary - Deduction
13. Write a program to illustrate pointer arithmetic.
14. Write a program to read the data character by character from a file.
15. Write a program to create ***Book (ISBN, Title, Author, Price, Pages, Publisher)***structure and store book details in a file and perform the following operations
    a. Add book details
    b. Search a book details for a given ISBN and display book details, if available
    c. Update a book details using ISBN
    d. Delete book details for a given ISBN and display list of remaining Books

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA - 520 010

An autonomous college in the jurisdiction of Krishna University, A.P., India

COMPUTER SCIENCE	CSCT21B	2020-21	B.Sc. (MPCS, MECS, MSCS, MSCA, MCCS)

SEMESTER - II **Credits: 4**

DATA STRUCTURES (NEW SYLLABUS)

Course Objectives

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

Course Learning Outcomes:

COURSE OUTCOME NO	Upon successful completion of the course, student will be able to:
CO1	Learn the concepts of ADT and understand analysis of algorithms
CO2	Understand available Data Structures for data storage and processing and Develop ability to implement different Searching.
CO3	Learn stacks, queues and their applications
CO4	Understand trees, graphs and implement their operations
CO5	Develop ability to implement different Sorting

Total Hrs : 60

Online - 36 hrs / Offline - 24 hrs

UNIT – I: **Total - 11 hrs**

1.1 Introduction to Data Structures: Online 6Hrs

1.1.1 Introduction to the Theory of Data Structures
1.1.2 Data Representation
1.1.3 Abstract Data Types
1.1.4 Data Types
1.1.5 Primitive Data Types
1.1.6 Data Structure and Structured Type
1.1.7 Atomic Type
1.1.8 Difference between Abstract Data Types, Data Types and Data Structures
1.1.9 Refinement Stages

1.2 Principles of Programming and Analysis of Algorithms Offline: 5Hrs

1.2.1 Software Engineering
1.2.2 Program Design
1.2.3 Algorithms
1.2.4 Different Approaches to Designing an Algorithm
1.2.5 Complexity
1.2.6 Big 'O' Notation
1.2.7 Algorithm Analysis
1.2.8 Recursion

UNIT – II: **Total - 11 hrs**

2.1 Linked Lists: Online: 11Hrs

2.1.1 Introduction to Lists and Linked Lists
2.1.2 Basic Linked List Operations
2.1.3 Doubly Linked List
2.1.4 Circular Linked List
2.1.5 Atomic Linked List
2.1.6 Linked List in Arrays
2.1.7 Linked List versus Arrays

UNIT – III: **Total - 14 hrs**

3.1 Stacks: Online: 6Hrs

3.1.1 Introduction to Stacks
3.1.2 Stack as an Abstract Data Type
3.1.3 Representation of Stacks through Arrays
3.1.4 Representation of Stacks through Linked Lists
3.1.5 Applications of Stacks
3.1.6 Stacks and Recursion

3.2 Queues: **Online: 8Hrs**

3.2.1 Introduction
3.2.2 Queue as an Abstract data Type
3.2.3 Representation of Queues
3.2.4 Circular Queues
3.2.5 Double Ended Queues- Deques
3.2.6 Priority Queues, Application of Queues

UNIT – IV: **Total - 10 hrs**

4. Binary Trees: **Online: 10Hrs**

4.1 Introduction to Non- Linear Data Structures
4.2 Introduction Binary Trees
4.3 Types of Trees
4.4 Basic Definition of Binary Trees
4.5 Properties of Binary Trees
4.6 Representation of Binary Trees
4.7 Operations on a Binary Search Tree
4.8 Binary Tree Traversal
4.9 Counting Number of Binary Trees
4.10 Applications of Binary Tree

UNIT – V: **Total - 14 hrs**

5.1 Searching and sorting: **Online: 6Hrs**

5.1.1 Sorting – An Introduction
5.1.2 Bubble Sort
5.1.3 Insertion Sort
5.1.4 Merge Sort
5.1.5 Searching- An introduction
5.1.6 Linear or sequential search
5.1.7 Binary search
5.1.8 Indexed sequential search

5.2 Graphs: **Offline: 8Hrs**

5.2.1 Introduction to Graphs
5.2.2 Terms Associated with Graphs
5.2.3 Sequential Representation of Graphs
5.2.4 Linked Representation of Graphs
5.2.5 Traversal of Graphs
5.2.6 Spanning Trees
5.2.7 Shortest Path
5.2.8 Application of Graphs.

TEXT BOOKS:

"Data Structures using C", ISRD group Second Edition, TMH
"Data Structures through C", YashavantKanetkar, BPB Publications

REFERENCE BOOKS:

"Data Structures Using C" Balagurusamy E. TMH

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA - 520 010

An autonomous college in the jurisdiction of Krishna University, A.P., India

COMPUTER SCIENCE	CSCP21B	**2020-21**	**B.Sc. (MPCS, MECS, MSCS, MSCA, MCCS)**

SEMESTER - II **Practical - II** **Credits: 1**

DATA STRUCTURES LAB (NEW SYLLABUS)

COURSE OUTCOME NO	Upon successful completion of this course, students should have the knowledge and skills to:
CO_1	To implement stacks, queues using arrays and linked lists.
CO_2	Write program for conversion from infix to postfix.
CO_3	To implement different sorting's.
CO_4	To Construct binary trees and binary search trees.
CO_5	To implement binary tree traversals.

Cycle - I

Week 1: Write a program to read 'N' numbers of elements into an array and also perform the following operation on an array

- **Add an element at the beginning of an array**
- **Insert an element at given index of array**
- **Update a element using a values and index**
- **Delete an existing element**

Week 2: Write Program to implement the Stack operations using an array.

Week 3: Write a program using stacks to convert a given infix expression to postfix.

Week 4: Write a program for arithmetic expression evaluation.

Week 5: Write Program to implement the Stack operations using Linked List.

Week 6: Write Program to implement the Queue operations using an array.

Week 7: Write Program to implement the Queue operations using Liked List.

Week 8: Write Program to implement circular Queue operations using an array.

Cycle - II

Week 9: Write a program to implement de-queues.

Week 10: Write a program to implement single linked list.

Week 11: Write a program to implement double linked list.

Week 12: Write a program for Binary Search Tree Traversals.

Week 13: Write a program to search an item in a given list using the following Searching Algorithms

- **Linear Search**
- **Binary Search.**

Week 14: Write a program for implementation of the following Sorting Algorithms

- **Bubble Sort**
- **Insertion Sort**
- **Merge sort**

Week 15: Write a program for implementation of the following graph traversals.

- **BFS**
- **DFS**

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA 10

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam, A.P.)

COMPUTER SCIENCE	CSH T11	2020-2021	B.SC (Honors)

SEMESTER – I **Credits – 4**

PROGRAMMING FUNDAMENTALS

Total Hrs:60 (4h/w)

(Online-36hrs & offline-24hrs)

UNIT – I Introduction to Programming **12 Hrs**

1.1 Introduction to Algorithms and Programming Languages (Online Teaching) (5 hr)

1.1.1 Algorithms, key features of algorithms **(Online Teaching) (1hr)**

1.1.2 Flow charts Off-Line(1.1.2&1.1.3) (1 hr)

1.1.3 Pseudo code

1.1.4 Programming Languages - Generations of programming languages **(Online Teaching)(1hr)**

1.1.5 Structured programming languages.

1.2 Programming Constructs Off-line (6 hr)

1.2.1 Structure of C program (1 hr)

1.2.2 Keywords, identifiers (2 hr)

1.2.3 Basic data types (2 hr)

1.2.4 Constants and variables (1 hr)

1.2.5 Operators **(Online Teaching) (2 hr)**

1.2.6 Input-Output statements **(Online Teaching) (1 hr)**

UNIT – II **16 Hrs**

2.1 Control Structures (Online Teaching) (10 hr)

2.1.1 Need of control structures Off-Line (2 hr)

2.1.2 Branching Control Structures Off-Line (1 hr)

2.1.3 Looping Control Structures **(Online Teaching)(4 hr)**

2.1.4 Jumping Statements **(Online Teaching)(1 hr)**

2.2 Arrays Off-line (3 hr)

2.2.1 Declaration of arrays (1 hr)

2.2.2 Single, Two-dimensional arrays (2 hr)

2.2.3 Operations on arrays **(Online Teaching)(5 hr)**

2.2.3.1 Accessing Single, Two dimensional Arrays (1 hr)

2.2.3.2 Insertion into unsorted array (2 hr)

2.2.3.3 Deletion from unsorted array. (2 hr)

UNIT - III **16 Hrs**

3.1 Functions (Online Teaching) (9 hr)

3.1.1 Function declarations off-line (1 hr)

3.1.2 Function definition

3.1.3 Calling a function off-line (2 hr)

3.1.4 Return statement

3.1.5 Passing parameters **(Online Teaching)(3 hr)**

3.1.6 Recursion **(Online Teaching)(3 hr)**

3.1.7 Types of functions **(Online Teaching)(2 hr)**

3.1.8 Categories of functions off-line (1 hr)

3.2 Passing Arrays to functions

3.3 Storage classes **(Online Teaching) (1 hr)**

3.4 String and Character functions. (off-line) **(2 hr)**

UNIT – IV **12 Hrs**

4.1 Pointers (Online Teaching) (8 hr)

4.1.1 Introduction to Pointers (off-line)**(1 hr)**
4.1.2 Declaring pointer variables (off-line)**(1 hr)**
4.1.3 Pointer expressions and pointer arithmetic (off-line)**(1 hr)**
4.1.4 Pointers with Arrays and Functions. **(Online Teaching) (1 hr)**

4.2 Structures

4.2.1 Introduction to Structures **(Online Teaching)(1 hr)**
4.2.2 Declaration- Initialization- Accessing the members of a structures **(Online Teaching)(2 hr)**
4.2.3 Nested structures **(Online Teaching)(1 hr)**
4.2.4 Arrays of structures (off- line)**(1 hr)**
4.2.5 Structures and functions **(Online Teaching)(1 hr)**

4.3 Union (Online Teaching)

4.3.1 Introduction to Union **(1 hr)**
4.3.2 Difference between Structure and Union
4.3.3 Declaring, Accessing and Initializing a Union. **(1 hr)**

UNIT – V: 4 Hrs

5.1 Files (Online Teaching) (4 hr)

5.1.1 Introduction to Files concept **(1 hr)**
5.1.2 File Handling Functions **(1 hr)**
5.1.3 Opening a file- Closing a file – Reading data from a file – Writing data to files **(1 hr)**
5.1.4 Error Handling during File Operations **(1 hr)**

Text Book: Computer Fundamentals and Programming in 'C', Reema Thareja, 2012, Oxford University Press.
Reference Books:

1. Mastering 'C', R Venu Gopal, S R Prasad, 2006, Tata McGraw – Hill Education.
2. Programming in ANSI C, E. Balagurusamy, V edition, Tata McGraw – Hill Education.

1. Hill

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA :: VIJAYAWADA-10
An Autonomous college in the jurisdiction of Krishna University, Machilipatnam, A.P, India

Computer Science **2020-21** **B. Com (Computer Applications)**
CABT24 E–COMMERCE & WEB DESIGNING
Semester – II **Credits: 3**
Total Hours: 60

COURSE OBJECTIVES:

The main objective of the course is to impart conceptual understanding on business transactions on worldwide web and electronic commerce & Electronic Customer Relationship Management and Web designing concepts for providing quality content on website.

COURSE OUTCOMES:

1. Gain knowledge in E- commerce and its business models
2. Differentiate traditional and e – marketing and also gain knowledge in E-CRM and EPS
3. Understand the structure of HTML its basic tags
4. Implement various HTML tags for web page development
5. Understand about web page designing

UNIT I: An Overview on E-Commerce **10 Hrs.**

1.1 Introduction E-Commerce
1.1.1 Definition of E- Commerce and its advantages & disadvantages
1.1.2 Electronic Data Interchange (EDI)
1.1.3 E-Commerce transactional issues and challenges
1.1.4 Difference between Commerce and E-Commerce
1.2 Business Models for Ecommerce
1.2.1 B2C -Business to consumer.
1.2.2 B2B – Business to business
1.2.3 C2B – Consumer to business.
1.2.4 C2C – Consumer to consumer.

UNIT II: E-Marketing &E – CRM & Electronic Payment Systems **10 Hrs.**

2.1 Online Marketing
2.1.1 Traditional Vs. E-Marketing
2.1.2 Online Marketing
2.1.3 E-Advertising
2.1.4 Internet marketing
2.2 E – CRM
2.2.1 Definition of CRM and E-CRM and its Applications
2.2.2 E- CRM Architectural components
2.2.3 Definition & characteristics of E- SCM
2.2.4 Benefits and goals of E – SCM
2.2.5 E-Logistics of UPS

UNIT III: Electronic Payment Systems **10 Hrs.**

3.1 Types of EPS
3.2 Traditional payment system and modern payment system
3.3 Steps for electronic payment
3.4 Payment security

UNIT IV: Introduction to Web Designing **12 Hrs.**

4.1 HTML
4.1 .1 Define HTML
4.1.2 Structure of HTML
4.1.3 Basic HTML tags
4.1.4 Formatting HTML tags
4.2 Lists

4.2.1 Ordered List
4.2.2 Unordered List
4.3 Links
4.3.1 Link tag
4.3.2 Image tag
4.3.3 Marquee tag
4.4 Tables
4.4.1 Table Creation
4.4.2 Attributes of Table
4.5 forms & Frames
4.5.1 Forms creation
4.5.2 Form tag
4.5.3 Input fields of form
4.5.4 Frame Creation
4.5.5 Frameset tag
4.5.6 Frame tag

UNIT V: Introduction to WIX Editor **18 Hrs.**

5.1 Getting Started With Wix
5.1.1 Adding and Editing Text
5.1.2 Adding a Site Title
5.1.3 Changing Your Text Font
5.1.4 Creating a Clickable URL
5.1.5 Adding Language Fonts
5.1.6 Adding Elements to Your Site
5.1.7 Arranging the Content on Your Site's Pages
5.1.8 About the Header
5.1.9 About the Footer
5.2 Adding an Image to Your Page Background
5.2.1 Uploading Your Own Background Image
5.2.2 Adding a Video to Your Page Background
5.2.3 Uploading Your Own Video Page Background
5.2.4 Uploading Your Own Images
5.2.5 Adding a Logo to Your Site
5.2.6 Adding a Link to an Image
5.3 Gallery and Button
5.3.1 Adding a Gallery
5.3.2 Cropping and Editing Gallery Images
5.3.3 Adding and Setting Up an Icon Button
5.3.4 Adding a Link to a Button
5.4 Video
5.4.1 Adding a Video from YouTube
5.4.2 Retrieving a YouTube URL
5.5 Menu
5.5.1 Adding a Site Menu
5.5.2 Customizing Your Menu Design
5.5.3 Adding and Deleting a Menu Folder
5.5.4 Reordering Menu Items
5.5.5 Changing the Direction of Menu Items

Text Book:

1. Uttam Kumar Roy, Web Technologies, Oxford University Press.
2. E-Commerce- A Managerial Perspective- P. T. Joseph, Prentice- Hall of India, New Delhi, 2005.

References:

1. Kogent Learning Solutions Inc.(Author), “Black Book HTML 5.0”, dreamtech.
2.Daniel Amor, E-Bussiness R(Evolution), Pearson Edude, New Delhi, 2005.

Weblink: https://support.wix.com/en/the-wix-editor/editor-basics

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA :: VIJAYAWADA-10
An Autonomous college in the jurisdiction of Krishna University, Machilipatnam, A.P, India

Computer Science 2020-21 B.Com (Computers Applications)

Semester - II CABP23 Credits: 2

WEB DESIGNING LAB

COURSE OBJECTIVES:

The purpose of this course is to introduce to students to the field of creation web pages using HTML language. The students will be able to enhance their analyzing and help to creation for Web Site Design

COURSE OUTCOMES:

COURSE OUTCOME NO

Upon successful completion of this course, students should have the knowledge and skills to

CO1 Implement HTML tags.
CO2 Implementing lists and tables in web pages.
CO3 Implementing frames in web pages.
CO4 Implementing frames in web pages.
CO5 Creation of CSS in a web page.

Week 1: Write a HTML program to print text in bold and italic font.
Week 2: Write a HTML program to print Heading tags.
Week 3: Write a HTML program using Text formatting tags
Week 4: Write a HTML program to implement unordered lists.Write a HTML program to implement order lists.
Week 5: Write a html file which display 3 images at LEFT, RIGHT and CENTER respectively in the browser.
Week 6: Create a HTML file which contains hyperlinks.
Week 7: Write a HTML program to Create a table
Week 8: Write a HTML program to Create a table using RowSpan and ColSpan.
Week 9: Write a HTML program to Create a simple form
Week 10: Create a Registration form that interacts with the user. Collect login name, password, date of birth, gender, address, qualification.
Week 11: Create a HTML page using frameset tag.

Developing Websites using WIX: https://www.wix.com/blog/2020/05/how-to-design-a-website/
Week 12: An online store to sell your products.
Week 13: A photography website to display and sell prints.
Week 14: A fitness website to book new clients.
Week 15: A restaurant website to help with online orders, delivery and payment

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA-10

An Autonomous college in the jurisdiction of Krishna University

Computer Science	**Course Code:** CAB T31A	**Course Type:** Core (Theory)	**Offered to whom:** B. COM (CA)
SEMESTER -III	**Course No - III**	**Year of introduction:** 2020-2021	**Year of revision:** 2021-2022
Percentage of Revision: --	**No. of Hours:** 45 hrs. Per Sem	**No. of. Credits: 4**	**Time**: 4 Hours/ week

PROGRAMMING WITH C & C++ (NEW SYLLABUS)

Course Objective:

The objective of the course is to learn basic programming in 'C' and object-oriented concepts in 'CPP' and students learn about structured programming and object-oriented programming with building ideas for writing program of their own with learning syntaxes and semantics.

Course Outcomes: At the end of this course the student is able to

CO1: To understand the meaning and generations of a programming language and to learn about c tokens.(PO5, PO7)
CO2: To learn about operators and conditional statements in C. (PO5, PO7)
CO3: To Gain knowledge about functions and to learn how to work with arrays- knowledge about strings and its functions. (PO5, PO7)
CO4: To learn about the concepts of structures and unions. (PO5, PO7)
CO5: To understand about Object-Oriented Programming concepts using CPP (PO5, PO7)

UNIT-I 10hrs

Introduction to c language, variables, data types

1.1 Introduction:

1.1.1 Introduction to Programming languages and Generations of Programming languages
1.1.2 Structure of C Program
1.1.3 Writing the first C Program
1.1.4 Files used in C Program
1.1.5 Compiling and Executing C- Programs
1.1.6 Using Comments
1.1.7 Keywords
1.1.8 Identifiers
1.1.9 Basic Data Types in C
1.1.10 Variables- Numeric, Character, Declaring, Initializing
1.1.11 Constants- Integer, Float, Character, String Declaring constants
1.1.12 I/O Statements in C- Formatting I/O, Printf (), scanf ()

UNIT-II 10 hrs

2.1 Operators

2.1.1 Operator and its types in C - Arithmetic, Relational, Equality, Logical, Unary, Conditional, Bitwise, Assignment, Comma, Size of

2.2 WORKING WITH CONTROL STATEMENTS, LOOPS

2.2.1 Introduction to Decision Control Statements
2.2.2 Conditional Branching Statements – If, If-Else, If-Else-if, Switch Case
2.2.3 Iterative or Looping Statements – While, Do-While, For
2.2.4 Break and Continue Statement
2.2.5 Go to Statement

UNIT-III 15 hrs

FUNCTIONS, ARRAYS AND STRINGS

3.1 Functions

3.1.1 Introduction
3.1.2 Using Functions

3.1.3 Function declaration/prototype
3.1.4 Function Definition
3.1.5 Function Call
3.1.6 Scope of variables

3.2 Arrays

3.2.1 Introduction
3.2.2 Declaration of Arrays
3.2.3 Accessing elements of the Array
3.2.4 One dimensional array declaration and initialization with example
3.2.5Two-dimensional array declaration and initialization with examples

UNIT-IV 12 hrs

4.1 Introduction to strings and string handling functions

4.2 Structures & Unions

4.2.1 Introduction to structures
4.2.2 Structure Declaration
4.2.3 Typedef
4.2.4 Initialization, accessing the members of a structure
4.2.5 Nested structures
4.2.6 Arrays of structures
4.2.7 Unions – Declaring, Accessing and Initialization
4.2.8 Differences between Structures and Unions

UNIT-V 13hrs

OBJECT ORIENTED CONCEPTS USING C++

5.1 Introduction to Object Oriented Programming

5.1.1 Object Oriented Concepts-Class-Object-Inheritance-Polymorphism- Encapsulation-Abstraction.
5.1.2 Structure of C++ program
5.1.3 Differences between C & CPP
5.1.4 Input and output statements in CPP

5.2 Classes & Objects

5.2.1Specifying a Class
5.2.2 Defining Member Functions
5.2.3 A C++ Program with class

5.3 Constructors & Destructors

5.3.1 Constructors
5.3.2 Parameterized Constructors
5.3.3 Copy Constructor
5.3.4 Destructors

5.4 Operator Overloading

5.4.1 Defining Operator Overloading
5.4.2 Overloading using unary and binary operators
5.4.3 Rules for overloading operators

Prescribed Books:

1. ReemaThareja, Introduction to C programming, Oxford University Press.
2. Objected Oriented Programming with C++: E. Balagurusamy, McGraw Hill.

Reference Books:

1. E Balagurusamy, Computing Fundamentals & C Programming – Tata McGraw-Hill, 2008.
2. Ashok N Kamthane, Programming with ANSI and Turbo C, Pearson Publisher, 2002.
3. Let Us C++: Y.Kanetkar, BPB

Course Delivery method: Face-to-face / Blended
Course has focus on: Skill Development.
Websites of Interest:

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SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA-10
An Autonomous college in the jurisdiction of Krishna University

Computer Science	**Course Code: CAB P31A**	**Course Type:** Core (Practical)	**Offered to whom** B. COM (CA)
SEMESTER -III	**Course No - III**	**Year of introduction:** 2021	**Year of revision: --**
Percentage of Revision: --	**No. of Hours:** 30 hrs. Per Sem	**No. of. Credits: 1**	**Time**: 2 Hours/ week

PROGRAMMING WITH C & C++ LAB (NEW SYLLABUS)

Course Objective:
The purpose of this course is to introduce students to the field of programming using C language and CPP. The students will be able to enhance their analyzing and programming skills and use the same for writing their own programs in C language and Using classes in CPP language.

Course Outcomes: At the end of this course the student is able to
CO1: Use various operators in C programming
CO2: Implement decision and looping control statements
CO3: Passing parameters to functions & Accessing elements of an array and creation of one dimensional and two-dimensional arrays.
CO4: Implementing string functions and structures, unions concepts
CO5: Implement basic OOP concepts in CPP.

LAB LIST

1. Write a C program to calculate the expression: ((a*b)/c)+(a+b+c)
2. Write a C program to calculate (a+b+c)3
3. Write a C program to convert temperature from
   a) Celsius to Fahrenheit
   b) Fahrenheit to Celsius
4. Write a C program to calculate compound Interest
5. Write a C program to find biggest of three numbers
6. Write a C program to read student marks in five subjects and calculate total and average
7. Write a C program to convert hours into seconds
8. Write a C program to display number of days in given month using switch case
9. Write a C program to find biggest of two numbers using switch case
10. Write a C program to find whether the given number is prime or not
11. Write a C program to check whether the given string is palindrome or not
12. Write a C program to find the reverse of a given number using functions
13. Write a C program to swap two numbers using functions
14. Write a C program to sort the given numbers in an array
15. Write a C program to perform addition of two matrices
16. Write a C program to display student details using structures
17. Write a CPP program to find addition of three numbers using classes
18. Write a CPP program to demonstrate the passing of arguments to the constructors
19. Write a CPP program to demonstrate the use of copy constructors
20. Write a CPP program to implement operator overloading concept

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Signature of the Course In-charge **Signature of the HOD**

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA :: VIJAYAWADA-10.

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

Computer Science	CABT41B	**2020-21**	**B. Com (Computer Applications)**

SEMESTER: IV **No of Credits: 4**

Total Hours: 60

DATABASE MANAGEMENT SYSTEM (NEW SYLLABUS)

Course Objective:

The objective of the course is to introduce the design and development of databases with special emphasis on relational databases. Design & develop database for large volumes & varieties of data with optimized data processing techniques.

Course Outcome:

On completing the subject, students will be able to:

CO1	Understand the Characteristics and basics of Database.
CO2	Understand file system and Architecture of DBMS
CO3	Enlighten ER Diagrams, Relationship, Notation & schema.
CO4	Enlighten EER Diagrams & Applying constraints on data.
CO5	Implementing SQL commands retrieve, insert, modify and update

UNIT-I Databases and Database Users 10 Hours

1. Introduction
2. Data and Information
3. Characteristics of the Database Approach
    1. Self-Describing Nature of the Database System
    2. Insulation between Programs and Data, Data Abstraction
    3. Support of Multiple Views of the data
    4. Sharing of Data and multiuser Transaction Processing
4. Evolution of Database System

UNIT-II 10 Hours

1. Traditional File Processing Systems
    1. Disadvantages of Traditional File Processing Systems
2. Advantages of the Database Approach
3. Database system Concepts and Architecture
    1. Data Models, Schemas and Instances
    2. Categories of Data Models
    3. Schemas, Instances and Database State
    4. Three-Schema architecture for database development
    5. Data Independence

UNIT-III Entity Relationship Model 12 Hours

1. Introduction
2. Entity types, Entity sets, Attributes and Keys
    1. Entities and Attributes
    2. Entity Types, Entity Sets, Keys and Value Sets
3. Relationships, Relationship types, Roles, and Structural Constraints
    1. Relationship Types, Sets and Instances

2. Relationship Degree, Role Names, and Recursive Relationships
3. Constraints on Relationship Types
4. Attributes of Relationship Types

4. Weak Entity Types
5. ER Diagrams, Naming Conventions, and Design Issues
    1. Summary of Notation for ER Diagrams
    2. Proper Naming of Schema Constructs

UNIT-IV Enhanced Entity-Relationship 13 Hours

1. Subclasses, super classes, and inheritance
2. Specialization and Generalization
3. Constraints and characteristics of Specialization and Generalization
4. Data Abstraction and knowledge representation concepts
    1. Classification and Instantiation
    2. Identification
    3. Aggregation and Association

The Relational Data Model, Relational Constraints

1. Introduction

1. Relational Model Concepts
    1. Domains, Attributes, Tuples and Relations 4.6.2Relational Model Notation
        1. Relational Constraints and Relational Database Schemas
        1. Entity Integrity, Referential Integrity and Foreign Keys

UNIT-V SQL (STRUCTURED QUERY LANGUAGE) 15 Hours

1. Introduction
2. Data Definition, Constraints and Schema changes in SQL
    1. Schema AND Catalog Concepts in SQL
    2. The CREATE TABLE Command and SQL Data Types and Constraints
    3. The DROP SCHEMA and DROP TABLE Command
    4. The ALTER TABLE Command
3. Basic Queries in SQL
    1. The SELECT-FROM-WHERE Structure of SQL Queries
    2. Dealing with Ambiguous Attribute Names and Naming (Aliasing)
    3. Unspecified WHERE-Clause and Use of Asterisk (*)
    4. Tables as sets in SQL
    5. Substring Comparisons, Arithmetic Operators, and Ordering
4. Aggregate Functions and Grouping 5.5Insert, Delete, and Update Statements in SQL
    1. The INSERT Command
    2. The DELETE Command
    3. The Update Command

Prescribed Books:

1. “Fundamentals of Database Systems” by R.Elmasri and S.Navathe
2. “Modern Database Management” by Jeffrey A.Hoffer,V.Ramesh, HeikkiTopi, Pearson
3. “Database System Concepts” by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010.

Reference Books:

1. “Database Management Systems” by Raghu Ramakrishnan, NcGrawhill,2002
2. “Prinicples of Database Systems” by J.D.Ullman
3. “An Introduction to Database Systems” by Bipin C Desai
4. “Fundamentals of Relational Database Management Systems” by S.Sumathi, S. Esakkirajan, Springer Publications

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA 10

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam, A.P.)

COMPUTER SCIENCE	CABP41A	**2020-21**	**B. Com (Computer Applications)**

SEMESTER – IV

Credits – 1

DATA BASE MANAGMENT SYSTEMS LAB (NEW SYLLABUS)

Course Objective:

The major objective of this lab is to provide a strong formal foundation in database concepts, technology and practice to the participants to groom them into well-informed database application developers.

1. Create a Department table with the following fields: DEPTNO, DNAME and LOCATION.
2. Describe the structure of „DEPT" table.
3. Insert values into "DEPT" table.
4. Select all values from „DEPT" table.
5. Create EMPLOYEE table with the following fields: EMPNO, ENAME, JOB, MGR, HIRE DATE, SALARY, COMMISTION and DEPTNO.
6. Describe the structure of „EMP" table.
7. Insert the values into „EMP" table.
8. Select all the values from „EMP" table.
9. Create table GRADE with the following fields: GRADE, LOSAL and HISAL.
10. Insert values into „GRADE" table.
11. Select all the values from „GRADE" table.
12. List all the employee information for department 10.
13. Find out the names of all employees.
14. Retrieve the list of names and salary of all employees.
15. Find the names of employees who have a salary equal to RS3000.
16. List the employee whose names start with "s".
17. List the employee names ending with „s".
18. List the names of employees whose names have exactly 5 characters.
19. List the employee names having D as the second character.
20. List the employee names having two A"S in their name.
21. Display all employee names which have „TH" or „LL" in them.
22. List out EMPNO, ENAME and SALARY of the employees whose salary is between 1500 and 2000.
23. List the names of employees who belong to department 10, 20.
24. List employee number of the employees who don"t have the name of „FORD", "JAMES" (OR)"JONES".
25. Display all the different job types.
26. Retrieve all rows from EMP table for department 30 and order by name.
27. List the employee names and HIREDATES in descending order of HIREDATE.
28. Retrieve department names and no"s in ascending order of DNAME.
29. List all employees" information that has a manager.
30. List name of the employees, job and commission of those employees who do the job of clerk or salesman and get no commission.
31. List the names and jobs of all clerks in department 20.
32. Display current data & time.
33. Display the concatenated string.
34. Display string „SMITH" of first character as capital letter.
35. Display the length of a string „SALESMAN".
36. Display the string „SALESMAN" in lower case.
37. Display all department names in upper case.
38. Display the value using ABS.
39. Displays the value using CEIL.
40. Display the value using FLOOR.
41. Display the value using POWER.
42. Display the value using SQRT.
43. Display all employees who were hired during 1982.
44. List the no of employees working with company.
45. List the no of jobs available in the emp table.
46. List the total salaries payable to employees.
47. List the maximum salary of employee working as a salesman.
48. List the minimum salary of employee from employee table.
49. List the avg salary from Employee table.
50. List the avg salary and no of employees working in the deptno 20.

51. Display the total salary for each department.
52. List the average salary of each job in the EMP table.
53. List the maximum salary for each department.
54. Find the total salary for each job of each department.
55. Display the no of employee in each department.
56. To find the maximum salary of each department, but show only the department that has a maximum salary of more than RS 2900.
57. List the total salary, maximum, minimum and average salary of employees job wise for department no and display only those rows having average salary greater than 1000.
58. Display the job tittle and total monthly salary for each job title with a total pay role exceeding RS 5000 and excludes sales people and sorts the list by the total monthly salary.
59. Display the different job in department 20 and 30.
60. List the employee no and names working in department no 20 and 30.
61. Display the different jobs in department 20 and 30 with union all.
62. Display all the employee names dept no‟s and dept names.
63. Display all employees in „DALLAS‟.
64. Display the employee names where salary is greater than employee no 7566.
65. Display the employee whose job tittle is same as that of employee 7369.
66. Display the employee name where salary is equal to the minimum salary.
67. Find the employees who earn the same salary as the minimum salary for departments.
68. To display all the departments that has a minimum salary greater than that of department 20.

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA :: VIJAYAWADA-10.

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

Computer Science	CABT53	2017-18	B.Com(Computer Applications)

SEMESTER:V **No of Credits :4**

Total: 60 Hours

PROGRAMMING IN C

Course context and overview

C is an imperative procedural language. It was designed to be compiled using a relatively straightforward compiler, to provide level access to memory, to provide language constructs that map efficiently to machine instructions, and to require minimal run-time support. Despite its low-level capabilities,

the language was designed to encourage cross- platform programming. It is one of the most popular computer languages today because of its structure, high-level abstraction, machine independent feature. A standards-compliant C program that is written with portability in mind can be compiled for a very wide variety of computer platforms and operating systems with few changes to its source code. C is one of the most popular programming languages of all time to create system software as well as application software.

Course Outcomes: At the end of the course the student will be able to:

1. **Understand** the fundamentals of C programming.
2. **Choose** the loops and decision making statements to solve the problem.
3. **Acquire knowledge** on functions to solve the given problem.
4. **Implement** different Operations on arrays.
5. **Understand** pointers, structures and unions.

(Online-36hrs & offline-24hrs)

Unit- I: **15Hrs**

1. Introduction to programming **(offline teaching) (4 hrs)**

1.1 Introduction to computer software(1hr)

1.2 Classification of computer software(2 hrs)

1.2.1 System Software - Compiler, interpreter, linker and loader

1.3 Programming languages (1hr)

2. Introduction to C **(6 hrs)**

2.1 Structure of C Program

2.2 Writing the first C Program

2.3 File used in C Program

2.4 Compiling and Executing C Programs

2.5 Using Comments

2.6 Keywords

2.7 Identifiers

2.8 Basic Data Types in C **(offline teaching)** (1 hr)

2.9 Variables – Numeric, character, Declaring, Initializing**(offline teaching)** (1 hr)

2.10 Constants,Integer, Float, Character, String Declaring Constants

2.11 I/OStatements in C –Formatting I/O, Printf(), Scanf()

2.12 Operators in C- Arithmetic, Relational, Equality, Logical, Unary, Conditional, Bitwise, Assignment, Comma, Size of

(offline teaching) (2hrs)

2.13 Programming Examples

2.14 Type Conversion and Type Casting**(offline teaching)** (1hr)

Unit-II:

3. Decision Control and Looping Statements **(offline teaching) 10Hrs**

3.1 Introduction to Decision Control Statements (1hr)

3.2 Conditional Branching Statements – If, If-Else, If-Else-if, Switch Case(3 hrs)

3.3 Iterative Statements – While, Do-While, For (2 hrs)

3.4 Break and ContinueStatement(2hrs)

3.5 Go to Statement(1hr)

Unit- III:

4. Functions **10Hrs**

4.1 Introduction (3 hrs)
4.2 Using functions
4.3 Function declaration/ prototype
4.4 Function Definition
4.5 Function call
4.6 Return statement (3hrs)
4.7 Passing parameters – Call By Value, Call By Reference
4.8 Scope of variables (3 hrs)
4.9 Storage Classes
4.10 Recursive function – Factorial of a Number. (1 hr)

Unit- IV:

5. Arrays **10Hrs**

5.1 Introduction (1hr)
5.2 Declaration of Arrays
5.3 Accessing elements of the Array – Calculating the Address of Array elements (3 hrs)
5.4 Storing Values in Array
5.5 Calculating the length of the Array (1 hr)
5.6 One dimensional array for inter-function communication(1 hr)
5.7 Two dimensional Arrays (1 hr)
5.8 Multi-Dimensional Arrays(1 hr)

6. Strings (2 hrs)

6.1 Introduction String functions

Unit-V: **15 Hrs**

7. Pointers: **(5 hrs)**

7.1 Understanding Computer Memory
7.2 Introduction to Pointers
7.3 declaring Pointer Variables
7.4 Passing Arguments to Functions using Pointer
7.5 Pointer and Arrays
7.6 Passing Array to Function.

8. Structure, Union, and Enumerated Data Types (5hrs)

8.1 Introduction – Structure Declaration, Typedef, Initialization, Accessing the members of a structure.
8.2 Nested Structures
8.3 Arrays of Structures
8.4 Structures and Functions**(offline teaching)** **(5 hrs)**
8.5 Unions – Declaring, Accessing, Initialization
8.6 Enumerated Data Types – Enum, Using Typedef, Assigning Values to Enumerated Variables.

Prescribed Books:

1. ReemaThareja, Introduction to C programming, Oxford University Press.

Reference Books:

1. E Balagurusamy, Computing Fundamentals & C Programming – Tata McGraw-Hill, 2008.
2. Ashok N Kamthane, Programming with ANSI and Turbo C, Pearson Publisher, 2002.

Henry Mulish & Hubert L.CooReemaThareja: The Spirit of C: An Introduction to ModernProgramming, Jaico Publishing House,1996.

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA : VIJAYAWADA-10.

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

Computer Science	**CAB P52**	**2017-18**	**B.Com(Computers)**
		2018-19	

SEMESTER:V **No of Credits :2**

PROGRAMMING IN C LAB **30Hrs**

1. Write a C program to calculate the expression: ((a*b)/c)+(a+b-c)
2. Write a C program to calculate $(a+b+c)^3$.
3. Program to convert temperature from
    a. Celsius to Fahrenheit.
    b. Fahrenheit to Celsius.
4. Write a C program to calculate the Compound Interest.
5. Program to convert Hours into seconds.
6. Write a C program to Fine Biggest of Three numbers.
7. Write a C program to read student marks in five subjects and calculate the Total, Average and Grade according to the following conditions:
    i. If average >=75 grade is _A‘.
    ii. If average >=60 and <75 grade is _B‘.
    iii. If average >=50 and <60 grade is _C‘.
    iv. Otherwise grade is _D‘.
    v. Check that marks in each subject >= 35.

8. Write a C program to find biggest of two numbers using Switch – Case.
9. Program to display number of days in given month using Switch – -Case.
10. Write a C program to check whether the given number is Prime or Not.
11. Write a program to
    i. Check whether given number is Palindrome or Not.
    ii. Find the Reverse of a given number.

12. Program to check whether a given number is
    i. Strong or Not.
    ii. Armstrong or Not.
    iii. Perfect or Not.

13. Write a C program to print Fibonacci Series.
14. Write a C Program to print Prime Numbers up to given range.
15. Write a program to print multiplication tables up to given range.
16. Write a C program to perform
    i. Matrix Multiplication.
17. Program to display Student Details using Structures.
18. Program to swap two numbers using different parameter passing techniques.

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA : VIJAYAWADA-10.

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

Computer Science	CABT52	2017-18	B.Com(Computer Applications)

SEMESTER:V **No of Credits :3** **Total: 60 Hrs (Online:36hs & offline:24hs)**

WEB TECHNOLOGY

Course context and overview

On completion of this course, a student will be able to describe the structure and functionality of the world wide web, create dynamic web pages using a combination of HTML, CSS, and JavaScript. A student will be able to develop a web application using web technologies.

Course title: Web Technologies

Course Outcomes: At the end of the course the student will be able to:

1. **Evaluate** interactive web pages using html and style sheets
2. **Enlighten** real time applications using event handling with validations.
3. **Analyze** to write a well formed / valid JavaScript document.
4. **Acknowledge** providing connectivity to web applications with examples.
5. **Analyze** to write an application which helps them to design a website.

Unit-I: **12Hours**

Unit-I: **12Hours**

Introduction:

1. HTML, XML, and WWW(Offline Teaching) **2hrs**

2. Topologies - Bus, Star, Ring, Hybrid, Tree; LAN, WAN, MAN(Offline Teaching) **2hrs**

3. HTML: Basic HTML, Document body, Text, Hyperlinks, Adding more formatting (Offline Teaching) 2hrs

1. Lists, Tables using colors and images(Offline Teaching) **2hrs**

1. **More HTML:** Multimedia objects, Frames, Forms towards interactive(online teaching) **2hr**

1. HTML document heading. (online teaching) **2hr**

Unit-II: **12Hours**

Cascading Style Sheets:

2.1 Introduction to CSS (Offline Teaching) 1hr

2.2 using Styles, simple examples (online teaching) 2hr

2.3 your own styles, properties and values in styles, style sheet(online teaching) 5hr

2.4 formatting blocks of information, layers (Online teaching) 4hr

Unit-III: **12Hours**

Introduction to JavaScript:

3.1 What is DHTML? (Offline Teaching) 1hr

3.2 JavaScript, basics, variables(Offline Teaching) 1hr

3.3 String manipulations (online teaching) 2hr

3.4 Mathematical functions (online teaching) 2hr

3.5 Statements, operators(Offline Teaching) 2hr

3.6 Arrays (online teaching) 2hr

3.7 Functions. (Offline Teaching) 2hr

Unit-IV: **12Hours**

Objects in JavaScript:

4.1 Data and objects in JavaScript (Offline Teaching) 3hr

4.2 Regular expressions (online teaching) 2hr

4.3 Exception handling, (online teaching) 2hr

4.4 Built-in objects (online teaching) 3hr

4.5 events (online teaching) 2hr

Unit-V: **12Hours**

DHTML with JavaScript:

5.1 Data validation, opening a new window (Offline Teaching) 3hr
5.2 Messages and confirmations, the status bar (online teaching) 2hr
5.3 Different frames, rollover buttons, moving images (online teaching) 2hr
5.4 Multiple pages in single download, (online teaching) 2hr
5.5 Text only menu system (Offline Teaching) 3hr

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA : VIJAYAWADA-10.

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

Computer Science		**2017-18**	**B.Com(CA)**

SEMESTER:V No of Credits :2

Web Technology LAB

1. Basic Tags in HTML.
2. Write a HTML page to print Hello World in bold and italic font.
3. Write a program to create lists.
4. Create a HTML file which displays 3 images at LEFT, RIGHT and CENTER respectively in the browser.
5. Create a HTML file which contains hyperlinks.
6. Create table with ROWSPAN and COLSPAN attribute of TABLE in HTML (Prepare timetable of your class).Include CELLSPACING & CELL PADDING
7. Introduction to CSS.
8. Write a program to create menu using HTML and CSS.
9. Develop static pages (using only HTML) of an online Book store. The pages should resemble: www.amazon.com The website should consist the following pages. Home page, Registration and user Login, User profile page, Books catalog, Shopping cart, Payment By credit card, order confirmation.
10. Introduction to JavaScript.
11. Write a program to print date using JavaScript.
12. Write a program to Sum and multiply two numbers using JavaScript.
13. Write a program to Show use of alert, confirm and prompt box.
14. Write a program to redirect, popup and print function in JavaScript.
15. Create validation Form in JavaScript.

Validate the registration, user login, user profile and payment by credit card pages using JavaScript

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA : VIJAYAWADA-10.
(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

Computer Science		**2017-18**	**B.Com(CA)**

SEMESTER:VI No of Credits :5

Teaching Hrs: 75

DATABASE MANAGEMENT SYSTEM

Course Objective:

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

Course Outcome:

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 Databases and Database Users 15 Hours

1.1 Introduction
1.2 Data and Information
1.3 Characteristics of the Database Approach
1.3.1 Self-Describing Nature of the a Database System
1.3.2 Insulation between Programs and Data, Data Abstraction
1.3.3 Support of Multiple Views of the data
1.3.4 Sharing of Data and multiuser Transaction Processing
1.4 Evolution of Database Systems

UNIT-II 15 Hours

2.1 Traditional File Processing Systems
2.1.1 Disadvantages of Traditional File Processing Systems
2.2 The Database Approach
2.2.1 Data Models
2.2.2 Relational Databases
2.2.3 Data base management systems
2.3 Advantages of the Database Approach
2.4 Costs and risks of the database approach
2.5 Components of the Database Environment
2.6 Three-Schema architecture for database development
2.7 Managing the people involved in database development

UNIT-III Entity Relationship Model 15 Hours

3.1 Introduction
3.2 Entity types, Entity sets, Attributes and Keys
3.2.1 Entities and Attributes
3.2.2 Entity Types, Entity Sets, Keys and Value Sets
3.3 Relationships, Relationship types, Roles, and Structural Constraints
3.3.1 Relationship Types, Sets and Instances
3.3.2 Relationship Degree, Role Names, and Recursive Relationships
3.3.3 Constraints on Relationship Types
3.3.4 Attributes of Relationship Types
3.4 Weak Entity Types

3.5 ER Diagrams, Naming Conventions, and Design Issues
3.5.1 Summary of Notation for ER Diagrams
3.5.2 Proper Naming of Schema Constructs

UNIT-IV Enhanced Entity-Relationship 15 Hours

4.1 Subclasses , super classes, and inheritance
4.2 Specialization and Generalization

4.3 Constraints and characteristics of Specialization and Generalization
4.4 Data Abstraction and knowledge representation concepts
4.4.1 Classification and Instantiation
4.4.2 Identification
4.4.3 Aggregation and Association
The Relational Data Model, Relational Constraints
4.5 Introduction
4.6 Relational Model Concepts
4.6.1 Domains, Attributes, Tuples and
Relations 4.6.2Relational Model Notation
4.7 Relational Constraints and Relational Database Schemas
4.7.1 Entity Integrity, Referential Integrity and Foreign Keys

UNIT-V SQL (STRUCTURED QUERY LANGUAGE) 15 Hours

5.1 Introduction
5.2 Data Definition, Constraints and Schema changes in SQL
5.2.1 Schema AND Catalog Concepts in SQL
5.2.2 The CREATE TABLE Command and SQL Data Types and Constraints
5.2.3 The DROP SCHEMA and DROP TABLE Command
5.2.4 The ALTER TABLE Command
5.3 Basic Queries in SQL
5.3.1 The SELECT-FROM-WHERE Structure of SQL Queries
5.3.2 Dealing with Ambiguous Attribute Names and Naming (Aliasing)
5.3.3 Unspecified WHERE-Clause and Use of Asterisk (*)
5.3.4 Tables as sets in SQL
5.3.5 Substring Comparisons, Arithmetic Operators, and Ordering
5.4 Aggregate Functions and Grouping
5.5Insert, Delete, and Update Statements in SQL
5.5.1 The INSERT Command
5.5.2 The DELETE Command
5.5.3 The Update Command

Prescribed Books:

1. —Fundamentals of Database Systems‖ by R.Elmasri and S.Navathe
2. —Modern Database Management ‖ by Jeffrey A.Hoffer,V.Ramesh, HeikkiTopi, Pearson
3. —Database System Concepts‖ by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010.

Reference Books:

1. —Database Management Systems‖ by Raghu Ramakrishnan, NcGrawhill,2002
2. —Prinicples of Database Systems‖ by J.D.Ullman
3. —An Introduction to Database Systems‖ by Bipin C Desai
4. —Fundamentals of Relational Database Management Systems‖ by S.Sumathi, S. Esakkirajan, Springer Publications

Student Activity:

1. Create your College database for placement purpose.
2. Create faculty database of your college with their academic performance scores.

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA :: VIJAYAWADA-10.
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Computer Science		**2017-18**	**B.Com(CA)**

SEMESTER:VI No of Credits :3

PHP and My SQL

Total: 60 Hrs

Course Objective:

Students will gain an understanding of advanced web server technologies including server side scripting, database connectivity, application frameworks and web protocols. Students will apply that knowledge using the latest web development and programming technologies.

Student Learning Outcomes

The student will: 1. Describe and use the features and syntax of programming language PHP
2. Create, translate, and process HTML information using the Common Gateway Information (CGI) protocol.
3. Retrieve, insert, update, and delete data from the relational database MySQL

Unit-I:

Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output. Working with Functions: Defining Functions, Calling functions, returning the values from UserDefined Functions, Variable Scope, Saving State between Function calls with the Static statement, more about arguments.

Unit-II:

Working with Arrays: Arrays, Creating Arrays, Some Array-Related Functions. Working with Objects: Creating Objects, Object Instance. Working with Strings, Dates and Time: Formatting Strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

Unit-III:

Working with Forms: Creating Forms, Accessing Form - Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads. Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsettling Variables, Using Sessions in an Environment with Registered Users.

Unit-IV:

Working with Files and Directories: Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen (), Running Commands with exec(), Running Commands with system ( ) or passthru ( ). Working with Images: Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input.

Unit-V:

Interacting with MySQL using PHP: MySQL Versus MySQL Functions, Connecting to MySQL with PHP, Working with MySQL Data. Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

References:

1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education (2007).
2. XueBai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomson (2006).

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA :: VIJAYAWADA-10.
(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

Computer Science		**2017-18**	**B.Com(CA)**

SEMESTER:VI No of Credits :2

PHP and My SQL LAB

Part – I (SQL)

1. Create a Department table with the following fields: DEPTNO, DNAME and LOCATION.
2. Describe the structure of _DEPT‘ table.
3. Insert values into ‘DEPT‘ table.
4. Select all values from _DEPT‘ table.
5. Create EMPLOYEE table with the following fields: EMPNO, ENAME, JOB, MGR, HIRE DATE, SALARY, COMMISTION and DEPTNO.
6. Describe the structure of _EMP‘ table.
7. Insert the values into _EMP‘ table.
8. Select all the values from _EMP‘ table.
9. Create table GRADE with the following fields: GRADE,LOSAL and HISAL.
10. Insert values into _GRADE‘ table.
11. Select all the values from _GRADE‘ table.
12. List all the employee information for department 10.
13. Find out the names of all employees.
14. Retrieve the list of names and salary of all employees.
15. Find the names of employees who have a salary equal to RS3000.
16. List the employee whose names starts with an ‘s‘.
17. List the employee names ending with an _s‘.
18. List the names of employees whose names have exactly 5 characters.
19. List the employee names having D as the second character.
20. List the employee names having two A‘S in their name.
21. Display all employee names which have _TH‘ or _LL‘ in them.
22. List out EMPNO, ENAME and SALARY of the employees whose salary is between 1500 and 2000.
23. List the names of employees who belong to department 10,20.
24. List employee number of the employees who don‘t have the name of _FORD‘,‘JAMES‘(OR)‘JONES‘.
25. Display all the different job types.
26. Retrieve all rows from EMP table for department 30 and order by name.
27. List the employee names and HIREDATES in descending order of HIREDATE.
28. Retrieve department names and no‘s in ascending order of DNAME.
29. List all employees information who have a manager.
30. List name of the employees,job and commission of those employees who do the job of clerk or salesman and get no commission.
31. List the names and jobs of all clerks in department 20.
32. Display current data & time.
33. Display the concatenated string.
34. Display string _SMITH‘ of first character as capital letter.
35. Display the length of a string _SALESMAN‘.
36. Display the string _SALESMAN‘ in lower case.
37. Display all department names in upper case.
38. Display the value using ABS.

39. Display the value using CEIL.

40. Display the value using FLOOR.
41. Display the value using POWER.
42. Display the value using SQRT.
43. Display sysdate by adding 3 months and minus 2 months.
44. Display last day for given date.
45. Display month between two dates.
46. Display next day for given date.
47. Display day of the current date.
48. Display all employees who were hired during 1982.
49. List the no of employees working with company.
50. List the no of jobs available in the emp table.

Part – II (PHP and My SQL)

1. Create a static web page that shows your course details
2. Create a web page for online exam
3. Create a web page for login screen
4. Create a Javascript to demonstrate function
5. Create a Javascript to demonstrate click button
6. Create a web page that gives the pin number about your selected city
7. Write a script file that demonstrate number conversion system
8. Create a script file that shows the menu and prints the selected file into the browser
9. Write a script file that checks the file existence
10. Write a script that creates and delete the file
11. Write a script to write and append a file
12. Write a script to write and append a file
13. Create a web form that handles $_GET method
14. Create a web form that handles $_POST method
15. Write a program that prints different formats for a given value
16. Write a program that creates and prints the cookies information
17. Create a web page that use cookie to create a page counter
18. Write a web page that access session variables
19. Write a web page that access session variables
20. Write a PHP script that demonstrate the method of a child class overriding that of its parent
21. Create a script to handle an Exception in PHP
22. Write a PHP script to create table that contains student details in MySQL database
23. Write a PHP script to insert the data into

MySQL database 24.Write a PHP script to retrieve
the data from MySQL database 25.Write a SQL
query to generate a report using stored procedures.

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA-10

An Autonomous college in the jurisdiction of Krishna University

Computer Science	**Course Code:**	**Course Type:** Core (Theory)	**Offered to whom:** B.Com(Honors)
SEMESTER - VI	**Course No:**	**Year of introduction:** 2021-2022	**Year of revision: - - -**
Percentage of Revision: - - -	**No. of Hours:** 75 hrs. Per Sem	**No. of. Credits: 4**	**Time**: 5 Hours/ week

RELATIONAL DATABASE MANAGEMENT SYSTEMS

Course Objectives:

1. To educate students about evolution of database systems and its components, managing databases.
2. To educate students about database design principles, normalization and data models.
3. To educate students about implementing various commands.
4. To educate students about security, integrity in databases, organizing files and relationships.
5. To educate students about Distributed Database Design, query processing. And also to provide on-hands practice on implementing various SQL commands.

Course Outcomes:

By the end of the course, students will be

1. Able to gain knowledge on file oriented systems, database systems evolution and components, risks and costs and database development.(PO2, PO3, PO4,PO7)
2. Able to gain knowledge on database design, models, normalization and implementing relational database. (PO2, PO3, PO4,PO7)
3. Able to gain knowledge in client server databases, manipulating server data. (PO2, PO3, PO4,PO7)
4. Able to learn about file organizations, implementing logical relationships, DBA functions, goals, etc. (PO2, PO3, PO4,PO7)
5. Able to implement SQL queries. (PO2, PO3, PO4,PO7)

UNIT – I : 15Hrs

1.1 Database Systems Evolution
1.2 File Oriented Systems
1.3 Database System Components
1.4 Data Sharing
1.5 Strategic Database Planning
1.6 Database and Management Control
1.7 Risks and Costs and Databases
1.8 Database Development.

UNIT – II : 20Hrs

2.1 Database Design Principles of Conceptual Database Design
2.2 Conceptual Data Models
2.3 Aggregation
2.4 Relational Data Model

2.5 Normalization

2.6 Transforming a Conceptual model to Relational Model
2.7 Relational Database Implementation
2.8 Relational Algebra.

UNIT – III : **10Hrs**

3.1 SQL Schema and Table Definition
3.2 Data Manipulation
3.3 View Definition
3.4 Client – Server Databases
3.5 Server Data Manipulation and Programming.

UNIT – IV : **15Hrs**

4.1 Physical Database Systems Storage Media
4.2 Disk Performance Factors
4.3 File Organization
4.4 Implementing Logical Relationships
4.5 Database Administration and Control
4.6 DBA Functions
4.7 DBA Goals
4.8 Database Integrity
4.9 Database Security
4.10 Database Recovery.

Unit – V: **15Hrs**

5.1 Distributed Database Systems Design
5.2 Query Processing
5.3 Data Integrity Recovery
5.4 Client / Server Systems
5.5 DBMS Selections and Implementation
5.6 DBMS Functions and Capabilities
5.7 Case studies of RDMBS package ORACLE.
5.8 Lab Work: Using SQL commands for Schema Creation, Table Definition, Manipulation and Transaction processing.

Suggested Readings:

1. Database Management & Design – Gary Hansen & James, Hansen (Prentice Hall).
2. Modern Database Management – Hoffer, Prescott & Mc Fadden (Pearson Education).
3. Database System Concepts – Abraham Silberschatz, Henry F. Korth, S. Sudarshan, (Mc Graw Hill).

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA-10

An Autonomous college in the jurisdiction of Krishna University

Computer Science	**Course Code: CSC T01**	**Course Type:** Core (Theory)	**Offered to whom:** B.Sc. (MPCS, MSCS (A) & (B), MSCA, MCCS)
SEMESTER -III	**Course No - III**	**Year of introduction:** 2020-2021	**Year of revision:** 2021-2022
Percentage of Revision: 15%	**No. of Hours:** 60 hrs. Per Sem	**No. of. Credits:** 4	**Time**: 4 Hours/ week

OBJECT ORIENTED PROGRAMMING USING JAVA (NEW SYLLABUS)

Course Prerequisites (if any): Programming Concepts.

Course Description: 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 Objectives:

1. Understand the features of Object Oriented Programming.
2. Understand features of Java programming language.
3. Know how to write and execute java programs in text editors.
4. Apply polymorphism, inheritance, multithreading, exception handling mechanism and packages in real life applications.
5. Write and read data from the files using streams, file handling methods and understand JDBC to perform database operations.

Course Outcomes: At the end of this course, students should be able to:

CO1: Understand the concept and underlying principles of Object-Oriented Programming, Understand how object-oriented concepts are incorporated into the Java programming language. (PO5, PO7).
CO2: Implement Object Oriented Programming Concepts (class, constructor, overloading, inheritance, overriding) in java. (PO5, PO7).
CO3: Analyse inheritance and interfaces in a Java program (PO5, PO7).
CO4: Evaluate Multithreading, exception handling in Java. (PO5, PO7).
CO5: Create applets and packages in a Java program, Use of Input/output Streams in java and use of JDBC with Oracle database. (PO5, PO7).

UNIT-1 10hrs

1.1 Fundamentals of Object – Oriented Programming

- 1.1.1 Introduction
- 1.1.2 Object Oriented paradigm
- 1.1.3 Basic Concepts of OOP
- 1.1.4 Benefits of OOP
- 1.1.5 Applications of OOP
- 1.1.6 Java features

1.2 Overview of Java Language

- 1.2.1 Introduction
- 1.2.2 Simple Java program structure
- 1.2.3 Java tokens
- 1.2.4 Java Statements
- 1.2.5 Implementing a Java Program
- 1.2.6 Java Virtual Machine
- 1.2.7 Command line arguments

1.3 Constants, Variables & Datatypes

- 1.3.1 Introduction
- 1.3.2 Constants, Variables, Data Types

1.3.3 Declaration of Variables

1.3.4 Giving Value to Variables
1.3.5 Scope of variables, Symbolic Constants, Type casting
1.3.6 Getting Value of Variables, Standard Default values

1.4 Operators & Expressions

UNIT- II **- 12 hrs**

2.1 Decision Making & Branching

2.1.1 Introduction,
2.1.2 Decision making with if statement, Simple if statement, If - Else statement, Nesting of if-else statements, the else if ladder
2.1.3 The switch statement, the conditional operator.

2.2 Looping

2.2.1 Introduction
2.2.2 The While statement
2.2.3 The do-while statement
2.2.4 The for statement
2.2.5 Jumps in loops.

2.3 Classes, Objects & Methods:

2.3.1 Introduction,
2.3.2 Defining a class, Adding variables, Adding methods,
2.3.3 Creating objects, Accessing class members,
2.3.4 Constructors, Method overloading,
2.3.5 Static members & Nesting of methods.

UNIT- III - 12 hrs

3.1 Inheritance

3.1.1 Extending a class & Overloading methods
3.1.2 Final variables and methods & Final classe
3.1.3 Abstract methods and classes.

3.2 Arrays, Strings

3.2.1 Arrays, One-dimensional arrays-Creating an array
3.2.2 Two – dimensional arrays
3.2.3 Strings,
3.2.4 Wrapper classes.

3.3 Interfaces:

3.3.1 MULTIPLE INHERITANCE - Introduction
3.3.2 Defining interfaces
3.3.3 Extending interfaces
3.3.4 Implementing interfaces
3.3.5 Assessing interface variable

UNIT- IV - 13 hrs

4.1 Multithreaded Programming

4.1.1 Introduction,
4.1.2 Creating Threads, Extending the Threads, Stopping and Blocking a Thread,
4.1.3 Lifecycle of a Thread,
4.1.4 Using Thread Methods,
4.1.5 Thread Exceptions,
4.1.6 Thread Priority & Synchronization,
4.1.7 Implementing the 'Runnable' Interface.

4.2 Managing Errors and Exceptions

4.2.1 Types of errors, Compile-time errors, Run-time errors
4.2.2 Exceptions, Exception handling, Multiple Catch Statements
4.2.3 Using finally statement.

4.3 Packages

4.3.1 Introduction,

4 .3.2 Java API Packages, Creating Packages, Accessing a Package, Using a Package

UNIT- V - 13 hrs

5.1 Applet Programming

5.1.1 Local and remote applets,
5.1.2 Applets and Applications, Building Applet code
5.1.3 Applet Life cycle: Initialization state, Running state, Idle or stopped state, Dead state Display state.

5.2 Managing Input/Output Files in Java

5.2.1 Introduction
5.2.2 Concept of Streams, Stream classes, Byte Stream Classes
5.2.3 Character Stream classes: Reader stream classes
5.2.4 Writer Stream classes, Reading and writing files.

5.3 Java Database Connectivity

5.3.1 JDBC introduction,
5.3.2 Stages in JDBC Program,
5.3.3 Working with Oracle Database: Inserting, Deleting and Updating records.

Text Books:

1. Programming with Java, E – Balagurusamy, 3e, TMH.
2. Core Java: An Integrated Approach, Dr. R. Nageswara Rao & KogentLearning Solutions Inc.

Reference Books:

1. Programming with Java, 2ed, John R. Hubbard, Schaum's outline Series, TMH
2. Deitel & Deitel, Java TM : How to program, PHI(2007)

Course Delivery method : Face-to-face / Blended
Course has focus on : Employability

Websites of Interest :

[1]. https://www.javatpoint.com/java-tutorial
[2]. https://www.w3schools.com/java/
[3]. https://www.tutorialspoint.com/jdbc/index.htm

Co-curricular Activities : Programming Contests, Assignments & Quiz

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Signature of the Course In-charge **Signature of the HOD**

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA-10
An Autonomous college in the jurisdiction of Krishna University

Computer Science	**Course Code: CSC P01**	**Course Type:** Core (Practical)	**Offered to whom:** B.Sc. (MPCS, MSCS (A) & (B), MSCA, MCCS)
SEMESTER -III	**Course No - III**	**Year of introduction:** 2020-2021	**Year of revision:** 2021-2022
Percentage of Revision: 15%	**No. of Hours:** 30 hrs. Per Sem	**No. of. Credits: 1**	**Time**: 2 Hours/ week

OBJECT ORIENTED PROGRAMMING USING JAVA LAB (NEW SYLLABUS)

Course Prerequisites (if any): Knowledge in OOP & Java concepts, Programming Fundamentals

Course Objective: To enable students to implement various OOP concepts using Java programming language and also educating students in accessing databases using JDBC connectivity.

Course Outcomes: At the end of this course, students should be able to:

CO1: Implementing class, constructor, method overloading, method overriding in java. (PO5, PO7)
CO2: Implement different types of inheritance and interfaces in a Java program (PO5, PO7)
CO3: Implement Multithreading, exception handling mechanisms in Java. (PO5, PO7)
CO4: Implement Applets and JDBC connectivity. (PO5, PO7)

LAB LIST

1. Write a program to use command line arguments.
2. Write a program to demonstrate that include a method inside the Rectangular Class.
3. Write a program to demonstrate Parameterized Constructors.
4. Write a program to demonstrate Method Overloading.
5. Write a Program to demonstrate Constructor Overloading.
6. Write a program to demonstrate Method Inheritance.
7. Write a program to demonstrate Method Overriding.
8. Write a program to demonstrate Abstract Classes.
9. Write a program to arrange given Strings in Alphabetical Order.
10. Write a program for implementing interfaces.
11. Write a program on Multiple Inheritance.
12. Write a program to demonstrate the Creating threads using thread class.
13. Write a program to demonstrate using thread methods.
14. Write a program to Implement Thread Priority.
15. Write a program to demonstrate Catch Blocks.
16. Write a program to Import Packages.
17. Write a program to demonstrate Applet Program.
18. Write a program to create table and insert values into table in a database.
19. Write a program to delete values in a table in database.
20. Write a program to update values in a table in database.

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Signature of the Course In-charge **Signature of the HOD**

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA-10

An Autonomous college in the jurisdiction of Krishna University

Computer Science	**Course Code: CSC T34B**	**Course Type:** Core (Theory)	**Offered to whom: B.Sc. (MPCS, MSCS (A)&(B), MSCA, MECS, MCCS)**
SEMESTER -III	**Course No - IV**	**Year of introduction:** 2017- 2018	**Year of revision:** 2021
Percentage of Revision: 10%	**No. of Hours:** 60 hrs. Per Sem	**No. of. Credits: 4**	**Time**: 4 Hours/ week

DATABASE MANAGEMENT SYSTEMS (NEW SYLLABUS)

Course Objectives:

1. To understand data, database, DBMS and its components and architecture.
2. To understand building blocks of ER model and EER model and their properties.
3. To understand CODD Rules, relational model, relational calculus, relational algebra and normalization.
4. To understand SQL commands and implement the queries on tables.
5. To understand PL/SQL operations.

Course Outcomes: At the end of this course, students should be able to:

CO1: Gain the Knowledge on Database, DBMS and analyse the difference between file- based system and DBMS.(PO5, PO7)
CO2: Model Database using ER and EER diagrams and design database schemas based on that model.(PO5, PO7)
CO3: Understanding the fundamental concepts of DBMS with Special emphasis on Relational Model, understanding Normalization and applying it to normalization of database. (PO5, PO7)
CO4: Create a small database using SQL COMMANDS, store and Retrieve data from the database. (PO5, PO7).
CO5: Understanding PL/SQL and various operations in PL/SQL (PO5, PO7).

Unit-I **- 12hrs**

Overview of Database Management Systems:

1.1 Introduction to Data, information
1.2 Data vs. Information
1.3 Database and DBMS-Role and advantages of DBMS
1.4 Types of databases
1.5 Problems with file system data management
1.6 Database systems
1.7 Components of Database system
1.8 DBMS functions

Data Models:

1.9 The importance of Data models
1.10 Data model basic building blocks
1.11 Business Rules
1.12 The evolution of Data Models
1.13 Degrees of data abstraction

Unit-II **- 12hrs**

Entity-Relationship Modelling:

2.1 The Entity Relationship Model
2.2 Entities
2.3 Attributes
2.4 Relationships
2.5 Connectivity and cardinality
2.6 Relationship degree
2.7 Developing an ER diagram

The Extended Entity Relationship Model

2.8 Entity Supertypes and Subtypes
2.9 Specialization and Generalization
2.10 Entity integrity
2.11 Selecting primary keys
2.12 Natural Keys and Primary Keys
2.13 Primary Key Guidelines
2.14 When to Use Composite Primary Keys

Unit-III **- 12hrs**

The Relational Database Model:

3.1 A logical view of data
3.2 Tables and their characteristics
3.3 Keys
3.4 Integrity rules
3.5 Relational Set operators
3.6 Codd's Relational database rules

Normalization of database tables:

3.7 The need for normalization
3.8 The normalization process
3.9 Converting to first normal form
3.10 Conversion to second normal form
3.11 Conversion to third normal form
3.12 Higher level normal forms

Unit-IV **- 12hrs**

Structured Query Language:

4.1 Introduction to Sql
4.2 Data Definition Commands
4.3 Data Types
4.4 Creating Table Structures
4.5 SQL Constraints
4.6 Advanced data definition commands
4.7 Alter
4.8 Drop

Data Manipulation Language:

4.9 Adding Table Rows Saving Table Changes
4.10 Updating Table Rows
4.11 Restoring Table Contents
4.12 Deleting Table Rows

Select Queries:

4.13 Selecting Rows with Conditional Restrictions
4.14 Operators
4.15 Advanced select queries
4.16 Virtual tables
4.17 Joining database tables
4.18 Sub queries
4.19 SQL functions

Unit-V **-12hrs**

PL/SQL:

5.1 Introduction
5.2 Structure of PL/SQL
5.3 PL/SQL Language Elements
5.4 Data Types
5.5 Control Structures
5.6 Iterative Control
5.7 Procedures
5.8 Functions
5.9 Database Triggers**:** Types of Triggers

Prescribed Text Books

1. Database Principles fundamentals of design, Implementation and management 9th edition- by Carlos Coronel, Steven Morris, Peter Rob- Cengage Learning Publisher
2. Oracle PL./SQL programming 5th edition- by Steven Feuerstein – OREILLY Publisher

Reference Books

1. Database Management Systems- by Raghu Ramakrishnan- McGrawhill Publisher
2. Principles of Database Systems-by J. D. Ullman- Pearson prentice hall Publisher
3. Database System Concepts- by Abraham Silberschatz, Henry Korth, and S. Sudarshan- McGraw hill Publisher
4. Fundamentals of Database Systems- by R. Elmasri and S. Navathe- Pearson Publisher

Course Delivery method: Face-to-face / Blended
Course has focus on: Skill Development, Employability
Websites of Interest:
www.tutorialspoint.com/plsql, www.javatpoint.com/pl-sql-tutorial
Co-curricular Activities: Programming Contests, Hackathons & Quiz.

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA-10

An Autonomous college in the jurisdiction of Krishna University

Computer Science	**Course Code:** CSC P33A	**Course Type:** Core (Practcial)	**Offered to whom B.Sc. (MPCS, MSCS (A) & (B), MSCA, MECS, MCCS)**
SEMESTER -III	**Course No - IV**	**Year of introduction:** 2020-2021	**Year of revision:** 2021-2022
Percentage of Revision: 10%	**No. of Hours:** 30 hrs. Per Sem	**No. of. Credits: 1**	**Time**: 2 Hours/ week

DATABASE MANAGEMENT SYSTEMS LAB (NEW SYLLABUS)

Course Objectives:

The main aim of this course is to enable students to experience database operations practically and develop logic in PL/SQL. **Course Outcomes:** At the end of this course, students should be:

CO1: Able to implement basic relationships.(PO5, PO7)
CO2: Able to implement various SQL queries.(PO5, PO7)
CO3: Able to use no of constraints on data.(PO5, PO7)
CO4: Able to use different types of joins.(PO5, PO7)
CO5: Able to design PL/SQL programs(PO5, PO7)

LAB LIST

1. Order Tracking Database

The Order Tracking Database consists of the following defined six relation schemas.
Employees(eno,ename,zip,hdate)
Parts(pno,pname,qoh,price,level) (hint: qoh: quality on hand)
Customers(cno,cname,street,zip,phone)
Orders(ono,cno,eno,received date,shipped date)
Odetails(ono,pno,qty)
Zipcodes(zip,city)

Solve the following queries 1. Get all pairs of customer numbers for customers based on same zip code.

2. Get part numbers for parts that have been ordered by at least two different customers.
3. For each odetail row, get ono, pno, pname,qty and price values along with the total price for the item. (total price=price*qty)
4. Get customer name and employee pairs such that the customer with name has placed an order through the employee
5. Get customer names living in Fort Dodge or liberal.
6. Get cname values of customers who have ordered a product with pno 10506.
7. Get pname values of parts with the lowest price.
8. Get cname values of customers who have placed at least one order through the employee with number 1000.
9. Get the cities in which customers or employees are located.
10. Get the total sales in dollars on all orders.
11. Get part name values that cost more than the average cost of all parts.
12. Get part names of parts ordered by at least two different Customers.
13. Get for each part get pno, pname and total sales
14. For each part, get pno, pname, total sales, whose total sales exceeds 1000 15. Get pno, part names of parts ordered by at least two different customers.
16. Get cname values of customers who have ordered parts from any one employee based in Wichita or liberal.

2. Shipment Database

An enterprise wishes to maintain the details about his suppliers and other corresponding details. For that it uses the following tables
Table s(sid,sname,address) primary key
: sid Table p(pid,pname,color)
primary key : pid Table
cat(sid,pid,cost) primary key :
sid+pid reference key : sid references
s.sid
pid references p.pid

Solve the following queries

1. Find the pnames of parts for which there is some supplier
2. Find the snames of suppliers who supply every part.
3. Find the snames of suppliers who suppy every red part.
4. Find the pnames of parts supllied by london supplier and by no one else
5. Find the sids of suppliers who charge more for some part other than the average cost of that part
6. Using group by with having clause get the part numbers for all the parts supplied by more than one supplier.
7. Get the names of the suppliers, who do not supply part p2.
8. Find the sids of suppliers who supply a red and a green part
9. Find the sids of suppliers who supply a red or a green part
10. Find the total amount has to pay for that supplier by part located from London

3. Employee database

An enterprise wishes to maintain a database to automate its operations. Enterprise divided into to certain departments and each department consists of employees. The following two tables describes the automation schemas Dept (deptno, dname, loc)
Emp (empno,ename,job,mgr,hiredate,sal,comm,deptno)

1. Create a view, which contain employee names and their manager names working in sales department.
2. Determine the names of employee, who earn more than their managers.
3. Determine the names of employees, who take highest salary in their departments.
4. Determine the employees, who located at the same place.
5. Determine the employees, whose total salary is like the minimum salary of any department.
6. Update the employee salary by 25%, whose experience is greater than 10 years.
7. Delete the employees, who completed 32 years of service.
8. Determine the minimum salary of an employee and his details, who join on the same date.
9. Determine the count of employees, who are taking commission and not taking Commission.
10. Determine the department does not contain any employees.
11. Find out the details of top 5 earner of company.
12. Display those managers name whose salary is more than average salary of his employees.
13. Display those employees who joined the company before 15th of the month?
14. Display the manager who is having maximum number of employees working under him?
15. Print a list of employees displaying ‘less salary’ if less than 1500 if exactly 1500 display as ‘exact salary’ and if greater than 1500 display ‘more salary’?
16. Display those employees whose first 2 characters from hire date-last 2 characters of salary?
17. Display those employees whose 10% of salary is equal to the year of joining?
18. In which year did most people join the company? Display the year and number of employees.
19. Display the half of the enames in upper case and remaining lower case
20. Display ename, dname even if there no employees working in a particular department (use outer join).

4. Pl/sql programs

1. Write a pl/sql program to check the given number is strong or not.
2. Write a pl/sql program to check the given string is palindrome or not.
3. Write a pl/sql program to swap two numbers without using third variable.
4. Write a pl/sql program to generate multiplication tables for 2,4,6.
5. Write a pl/sql program to display sum of even numbers and sum of odd numbers in the given range.
6. Write a pl/sql program to check the given number is palindrome or not.
7. Write a pl/sql procedure to prepare an electricity bill by using following table a. table used: elect

b. name null? Type

mno not null number(3) cname
varchar2(20) cur_read number(5)
prev_read number(5)
no_units number(5)
amount number(8,2) ser_tax
number(8,2) net_amt
number(9,2)

8. Write a procedure to update the salary of employee, who belongs to certain department with a certain percentage of raise.
9. Write a PL/SQL program to fire triggers on insert, update and delete commands.

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SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA-10

An Autonomous college in the jurisdiction of Krishna University

Computer Science	**Course Code: CSCT41C**	**Course Type:** Core (Theory)	**Offered to whom:** B.Sc. (MPCS, MECS, MSCS (A) & (B), MSCA, MCCS)
SEMESTER - IV	**Course No: V**	**Year of introduction:** 2021-2022	**Year of revision: - - -**
Percentage of Revision: - - -	**No. of Hours:** 60 hrs. Per Sem	**No. of. Credits: 4**	**Time**: 4 Hours/ week

OPERATING SYSTEMS (NEW SYLLABUS)

Course Objectives:

The Purpose of this course is to give students an idea of the services provided by the operating system, structure, organization of the file system, process synchronizations, scheduling and memory management.

Course Outcomes: At the end of this course, students should be able to

1. **Understand** Operating System Architectural design and its services. (PO1, PO3)
2. **Implementation** of Scheduling Algorithms. (PO2, PO4)
3. **Analyze** memory management techniques, concepts of virtual memory and disk scheduling. (PO2, PO3)
4. **Understand** the implementation of file systems and directories with the interfacing of IO devices with the operating system. (PO1, PO5)
5. **Identify** the deadlock situation and provide appropriate solutions so that protection and security of the operating system is also maintained. (PO1, PO3, PO4)

UNIT – I **11 Hrs**

1. Operating System:

1.1 Introduction
1.2 Operating Systems Objectives and functions,
1.3 Computer System Architecture,
1.4 OS Structure,
1.5 OS Operations.
1.6 Evolution of Operating Systems
1.7 Types of operating system
- 1.7.1 Simple
- 1.7.2 Batch
- 1.7.3 Multi programmed
- 1.7.4 Time shared
- 1.7.5 Parallel
- 1.7.6 Distributed Systems
- 1.7.7 Real-Time Systems
- 1.7.8 Operating System services

UNIT – II **13 Hrs**

2. Process and CPU Scheduling –

2.1 Process concepts
- 2.1.1 The Process
- 2.1.2 Process State
- 2.1.3 Process Control Block
- 2.1.4 Process communication

2.2 Threads.
2.3 Process Scheduling
- 2.3.1 Scheduling Queues
- 2.3.2 Schedulers,
- 2.3.3 Context Switch,

2.3.4 Preemptive Scheduling,
2.3.5 Dispatcher,
2.3.6 Scheduling Criteria,
2.3.7 Scheduling algorithms,
2.3.8 Case studies: Linux, Windows.

2.4 Process Synchronization,
2.4.1 The Critical section Problem,
2.4.2 Synchronization Hardware,
2.4.3 Semaphores,
2.4.4 Classic Problems of Synchronization,
2.4.5 Monitors

UNIT – III **13 Hrs**

3. Memory Management and Virtual Memory –

3.1 Logical & physical Address Space
3.2 Swapping
3.3 Contiguous Allocation
3.4 Paging-Structure of Page Table
3.5 Segmentation
3.6 Segmentation with Paging
3.7 Virtual Memory
3.8 Demand Paging
3.9 Performance of Demanding Paging
3.10 Page Replacement
3.11 Page Replacement Algorithms
3.12 Allocation of Frames

UNIT – IV **12 Hrs**

4. File System Interface –

4.1 The Concept of a File
4.2 Access methods
4.3 Directory Structure
4.4 File System Mounting
4.5 File Sharing
4.6 Protection
4.7 File System Structure
4.8 Mass Storage Structure
4.8.1 Overview of Mass Storage Structure
4.8.2 Disk Structure
4.8.3 Disk Attachment
4.8.4 Disk Scheduling

UNIT – V **11 Hrs**

5. Deadlocks –

5.1 System Model,
5.2 Deadlock Characterization
5.3 Methods for Handling Deadlocks
5.4 Deadlock Prevention
5.5 Deadlock Avoidance
5.6 Deadlock Detection and Recovery from Deadlock

TEXTBOOK

"Operating System Concepts"-Silberschatz, Galvin, Gagne-–eight Edition-John Willey & Sons INC

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

Co-curricular Activities: Programming Contests, Assignments & Quiz

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SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA-10
An Autonomous college in the jurisdiction of Krishna University

Computer Science	**Course Code: CSCP41C**	**Course Type:** Core (Practical)	**Offered to whom:** B.Sc. (MPCS, MECS, MSCS (A) & (B), MSCA, MCCS)
SEMESTER - IV	**Course No - V**	**Year of introduction:** 2021-2022	**Year of revision: - - -**
Percentage of Revision: - - -	**No. of Hours:** 30 hrs. Per Sem	**No. of. Credits:** 1	**Time**: 2 Hours/ week

OPERATING SYSTEMS LAB (NEW SYLLABUS)

Course Objective:

The Purpose of this course is to have students understand and the principles in the design and implementation of operating system software.

Course Outcomes: At the end of this course, students should be able to

CO 1. Implementing DOS & UNIX Commands
CO 2. Implementing CPU Scheduling Algorithms
CO 3. Implementing CPU Scheduling Algorithms, Deadlocks Avoidance, Prevention & Memory Management Techniques
CO 4. Implementing Contiguous Memory Allocation Techniques & Page Replacement Algorithms
CO 5. Implementing File allocation Strategies

Lab Exercises

1. **DOS -** Internal Commands

2. UNIX Commands

1. In your home directory create a directory named DIR
2. Copy all files whose filenames satisfy the following conditions to ~/DIR. The files are in /usr/include directory, their names start with m, end with .h and contain a number.
3. Create a subdirectory called SUBDIR in your DIR directory.
4. The first five lines of each file you have copied from /usr/include copy to file ~/DIR/ SUBDIR/first five.
5. The last lines of files in ~/DIR copy to file ~/DIR/SUBDIR/last.
6. Concatenate the two files in ~/DIR/SUBDIR into one file ~/DIR/SUBDIR/first and last
7. Delete the files in ~/DIR/SUBDIR except first and last.
8. Store the number of files and directories in ~/DIR into a file ~/DIR/SUBDIR/count
9. Output the long information in the ~/DIR/SUBDIR directory. (Not its content, but information on it).
10. Delete the contents of ~/DIR/SUBDIR/first and last file without removing the file itself.
11. Add a line containing just a star sign (i.e. *) to file ~/DIR/SUBDIR/first and last.
12. Delete ~/DIR together with all the files it contains.
13. Output lines number 11-20 from file /etc/passwd.

3. List of Programmes

1. Write a Program to implement First Come First Serve Scheduling algorithm
2. Write a Program to implement Shortest Job First Scheduling algorithm
3. Write a Program to implement Round Robin Scheduling algorithm
4. Write a Program to implement Priority Scheduling algorithm
5. Write a program to implement Worst Fit Contiguous Memory Allocation
6. Write a program to implement Best Fit Contiguous Memory Allocation
7. Write a program to implement First Fit Contiguous Memory Allocation
8. Write a program to implement First In First Out Page replacement Algorithm
9. Write a program to implement First In Least Recently Used Page replacement Algorithm
10. Write a program to implement First In Optimal Page replacement Algorithm

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SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA 10 (An Autonomous college in the jurisdiction of Krishna University, Machilipatnam, A.P.)

COMPUTER SCIENCE	CSC P51A	2020–21	B.SC (MPCS, MECS, MSCA, MSCS, MCCS)

SEMESTER – V **Credits: 2**

PRACTICAL PAPER – V

SOFTWARE ENGINEERING LAB (NEW SYLLABUS)

The Software Engineering Lab provides a deep insight into the importance of requirement modeling in the software industry.

COURSE OBJECTIVES:

1. To implement the software engineering methodologies involved in the phases of project development through object-oriented methodology.
2. To gain knowledge about open source tools used for implementing software engineering methods.
3. To exercise developing product-startups implementing software engineering methods.
4. Open source Tools: Visual Paradigm software tool

We draw a **UML** diagrams in Visual Paradigm which deals with the objects and classes in a system or application. The **Unified Modeling Language (UML)** is a standard language for specifying, visualizing, constructing, and documenting the artifacts of software systems, as well as for business modeling and other non- software systems. The UML represents a collection of best engineering practices that have proven successful in the modeling of large and complex systems.

Goals of UML

The primary goals in the design of the UML were:

1. Provide users with a ready-to-use, expressive visual modeling language so they can develop and exchange meaningful models.
2. Provide extensibility and specialization mechanisms to extend the core concepts.
3. Be independent of particular programming languages and development processes.
4. Provide a formal basis for understanding the modeling language.
5. Encourage the growth of the OO tools market.

Benefits of Visual Paradigm

Visual Paradigm (VP-UML) is a UML CASE Tool supporting UML 2, SysML and Business Process Modeling Notation (BPMN) from the Object Management Group (OMG). In addition to modeling support, it provides report generation and code engineering capabilities including code generation. It can reverse engineer diagrams from code, and provide round-trip engineering for various programming languages, in a cost-effective manner.

Course Outcome No	**Upon successful completion of this course, students should have the knowledge and skills to**
CO1	Analyze Software Requirements for the given Software Application.
CO2	Develop the UML Diagrams to view Software System in Static and Dynamic Aspects.
CO3	Select a Design Pattern related to their problem and draw the Class and Object Diagrams using the UML notations.
CO4	Improve individual / team work skills, communication & report writing skills with ethical values.

List of Experiments:

1. Design and Draw UML diagrams for Library Management System

- Draw a class diagram and its properties for Library Management System
- Draw a use case diagram and its properties for Library Management System

- Draw a sequence diagram and its properties for Library Management System
- Draw a Collaboration diagram and its properties for Library Management System
- Draw an activity Diagram and its properties for Library Management System
- Draw a state chart diagram and its properties for Library Management System

2. Design and Draw UML diagrams for Automated Teller Machine

- Draw a class diagram and its properties for ATM
- Draw a use case diagram and its properties for ATM
- Draw a sequence diagram and its properties for ATM
- Draw a Collaboration diagram and its properties for ATM
- Draw an activity Diagram and its properties for ATM
- Draw a state chart diagram and its properties for ATM

3. Design and Draw UML diagrams for Online Bookshop.

- Draw a class diagram and its properties for Online Bookshop
- Draw a use case diagram and its properties for Online Bookshop
- Draw a sequence diagram and its properties for Online Bookshop
- Draw a Collaboration diagram and its properties for Online Bookshop
- Draw an activity Diagram and its properties for Online Bookshop
- Draw a state chart diagram and its properties for Online Bookshop

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA: VIJAYAWADA - 10

An autonomous college in the jurisdiction of Krishna University, A.P., India

COMPUTER SCIENCE	CSCT51/CSHT53	2020-21	B.Sc (MPCS, MECS, MSCA, MSCS) & B.Sc (Hons)

SEMESTER – V **Credits: 3** **TOTAL HRS: 60**

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.

Online – 36 HRS
Offline- 24 HRS

UNIT–I: **12 Hours**

1.1 Introduction: **Offline- 5 Hrs**

1.1.1 The Software Engineering – Evolution and impact, 1 Hr
1.1.2 Software Development Projects, 1 Hr
1.1.3 Software Process and Project Metrics, 1 Hr
1.1.4 Emergence of Software Engineering, 1 Hr
1.1.5 Computer Systems Engineering, 1 Hr

1.2 Software Life cycle models: Online -(7 Hrs)

1.2.1 Need for life Cycle model, 1Hr
1.2.2 Classical waterfall model,
1.2.3 Iterative waterfall model, 1Hr
1.2.4 V-model, 1Hr
1.2.5 Prototyping model, 1Hr
1.2.6 Evolutionary model, 1Hr
1.2.7 Spiral model, 1Hr
1.2.8 Comparison of different life cycle models. 1Hr

UNIT–II: **12 Hours**

2.1 Software Project Management: **Offline - 6 Hrs**

2.1.1 Responsibilities of a Software Project Manager, 2 Hr
2.1.2 Project planning,
2.1.3 Metrics for Project size estimation and 2 Hr
2.1.4 scheduling. 2 Hr

2.2 Requirement Analysis: Online -(6 Hrs)

2.2.1 Requirements gathering and analysis, 1 Hr
2.2.2 Software Requirements Specification - contents of the SRS document, 1 Hr
2.2.3 Functional requirements, 2 Hr
2.2.4 Traceability,
2.2.5 Characteristics of good SRS DOCUMENT and 1 Hr
2.2.6 Organization of the SRS document. 1 Hr

UNIT-III: **12 Hours**

3.1 Software Design: **Offline - 5 Hrs**

3.1.1 Desirable characteristics of a good software design, 1 Hr
3.1.2 Cohesion and coupling, Layer Arrangement of Modules, 2 Hr

3.1.3 Function-oriented design and Object-oriented design. 2 Hr

3.2 Function-oriented software Design: Online- 7 Hrs

3.2.1 Overview of SA/SD methodology, 2 Hrs
3.2.2 structured analysis, 1 Hr
3.2.2 Data Flow Diagrams, 1 Hr
3.2.3 Structured Design and 1 Hr
3.2.4 Detailed Design. 2 Hrs

UNIT-IV: 12 Hours

4.1 Unified Modeling Language: Online (8 Hrs)

4.1.1 Overview of Object-oriented concepts, 1 Hr
4.1.2 Unified Modeling Language, 1 Hr
4.1.3 UML diagrams,
4.1.3.1 use case model, 2 Hr
4.1.3.2 Class diagrams, 1 Hr
4.1.3.3 Interaction diagrams, 1 Hr
4.1.3.4 Activity diagrams, state chart diagrams 2 Hr

4.2 User Interface Design: Offline - 4 Hrs

4.2.1 Characteristics of good user interface design, 1 Hr
4.2.2 **Basic** concepts, Types of user interfaces, 1 Hr
4.2.3 component-based GUI development, 1 Hr
4.2.4 A user interface Design Methodology 1 Hr

UNIT-V: 12 Hours

5.1 Coding and Testing: (Online – 8 Hrs)

5.1.1 Coding standards & guidelines, code review, 2 Hrs
5.1.2 testing, unit testing, 2 Hr
5.1.3 Black-box testing, 1 Hr
5.1.4 White-box testing, 2 Hr
5.1.4 Debugging, Integration testing, System testing.1 Hr

5.2 Software Reliability and Quality Management: Offline(4 Hrs)

5.2.1 Software Reliability, 1 hr
5.2.2 Statistical Testing, 1 hr
5.2.3 Software Quality. 2 hr

Text Book: Fundamentals of Software Engineering **-**By RAJABMALL –PHI Third Edition

REFERENCE BOOKS:

1. Roger Pressman S., “Software Engineering: A Practitioner's Approach”, 7th Edition, McGraw Hill, 2010.
2. Sommerville, “Software Engineering”, Eighth Edition, Pearson Education, 2007.

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA 10
(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam, A.P.)

COMPUTER SCIENCE	**CSC T52**	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – V **Credits: 3**

PAPER – V – DATA BASE MANAGEMENT SYSTEMS

1. .

UNIT-I **12 Hrs**

Overview of Database Management Systems

1.1 Introduction
1.2 Data and Information
1.3 Characteristics of the Database Approach
1.3.1 Self-Describing Nature of the a Database System
1.3.2 Insulation between Programs and Data, Data Abstraction
1.3.3 Support of Multiple Views of the data
1.3.4 Sharing of Data and \multiuser Transaction Processing
1.4 Actors on the Scene
1.4.1 Database Administrators
1.4.2 Database Designers
1.4.3 End Users
1.4.4 System Analysts and Application Programmers
1.5 Advantages of using a DBMS
1.5.1 Controlling Redundancy
1.5.2 Restricting unauthorized Access
1.5.3 Providing Persistent Storage for Program Objects and Data Structures
1.5.4 Permitting Inferencing and Actions Using Rules
1.5.5 Providing Multiple User Interfaces
1.5.6 Representing Complex Relationships Among data
1.5.7 Enforcing Integrity Constraints
1.5.8 Providing Backup and Recovery

Database System Concepts and Architecture

1.6 Data Models, Schemas and Instances
1.6.1 Categories of Data Models
1.6.2 Schemas, Instances, and Database State
1.7 DBMS Architecture and Data Independence
1.7.1 The Three-Schema Architecture
1.7.2 Data Independence
1.8 Database Languages and Interfaces
1.8.1 DBMS Languages
1.8.2 DBMS Interfaces
1.9 The Database system Environment
1.9.1 DBMS Component Modules
1.9.2 Database System Utilities

UNIT-II **14 Hrs**

Entity Relationship Model

1.1 Introduction
1.2 Entity types, Entity sets, Attributes and Keys
1.2.1 Entities and Attributes
1.2.2 Entity Types, Entity Sets, Keys and Value Sets
1.3 Relationships, Relationship types, Roles, and Structural Constraints
1.3.1 Relationship Types, Sets and Instances
1.3.2 Relationship Degree, Role Names, and Recursive Relationships
1.3.3 Constraints on Relationship Types
1.3.4 Attributes of Relationship Types
1.4 Weak Entity Types
1.5 ER Diagrams, Naming Conventions, and Design Issues
1.5.1 Summary of Notation for ER Diagrams
1.5.2 Proper Naming of Schema Constructs

Enhanced Entity-Relationship

1.6 Subclasses , super classes, and inheritance
1.7 Specialization and Generalization
1.8 Constraints and characteristics of Specialization and Generalization
1.9 Data Abstraction and knowledge representation concepts
1.9.1 Classification and Instantiation
1.9.2 Identification
1.9.3 Aggregation and Association
1.10 Advantages of ER Modelling

UNIT-III **10 Hrs**

The relational data model, Relational Constraints

3.1 Introduction
3.2 Relational Model Concepts
3.2.1 Domains, Attributes, Tuples and Relations
3.2.2 Characteristics of Relations
3.2.3 Relational Model Notation
3.3 Relational Constraints and Relational Database Schemas
3.3.1 Domain Constraints
3.3.2 Key Constraints and Constraints on Null
3.3.3 Relational Databases and Relational Database Schemas
3.3.4 Entity Integrity, Referential Integrity and Foreign Keys

Functional Dependencies and normalization for Relational Databases

3.4 Functional Dependencies
3.4.1 Definition of Functional Dependency
3.4.2 Inference Rules for Functional Dependencies
3.4.3 Equivalence of sets of Functional Dependencies
3.4.4 Minimal Sets of Functional Dependencies
3.5 Normal forms based on primary keys
3.5.1 Introduction to Normalization
3.5.2 First Normal Form
3.5.3 Second Normal Form
3.5.4 Third Normal Form
3.6 General Definitions of Second and Third Normal Forms
3.6.1 General Definition of Second Normal Form
3.6.2 General Definition of Third Normal Form

3.6.3 Interpreting the General Definition of 3NF
3.7 Boyce-Codd Normal Form

UNIT-IV **12 Hrs**

The Relational Algebra

4.1 Basic Relational Algebra Operations
4.1.1 The SELECT Operation
4.1.2 The PROJECT operation
4.1.3 Sequences of Operations and the RENAME Operation
4.1.4 Set Theoretic Operations
4.1.5 The JOIN Operation
4.1.6 A Complete Set of Relational Algebra Operations
4.1.7 The DIVISION Operation
4.2 Additional Relational Operations
4.2.1 Aggregate Functions and Grouping
4.2.2 Recursive Closure Operations
4.2.3 OUTER JOIN and OUTER UNION Operations
4.3 Tuple Relational Calculus
4.3.1 Tuple Variables and Range Relations
4.3.2 Expressions and Formulas in Tuple Relational Calculus
4.3.3 The Existential and Universal Quantifiers
4.3.4 Example Queries using the Existential Quantifier
4.4 Domain Relational Calculus
4.5 Overview of the QBE Language
4.5.1 Basic Retrievals in QBE
4.5.2 Grouping, Aggregation and Database Modification in QBE

UNIT-V **12 Hrs**

SQL (STRUCTURED QUERY LANGUAGE

5.1 Introduction
5.2 Data Definition, Constraints and Schema changes in SQL
5.2.1 Schema AND Catalog Concepts in SQL
5.2.2 The CREATE TABLE Command and SQL Data Types and Constraints
5.2.3 The DROP SCHEMA and DROP TABLE Command
5.2.4 The ALTER TABLE Command
5.3 Basic Queries in SQL
5.3.1 The SELECT-FROM-WHERE Structure of SQL Queries
5.3.2 Dealing with Ambiguous Attribute Names and Naming (Aliasing)
5.3.3 Unspecified WHERE-Clause and Use of Asterisk (*)
5.3.4 Tables as sets in SQL
5.3.5 Substring Comparisons, Arithmetic Operators, and Ordering
5.4 More Complex SQL Queries
5.4.1 Nested Queries and Set Comparisons
5.4.2 The EXISTS and UNIQUE Functions in SQL
5.4.3 Explicit Sets and NULLS in SQL
5.4.4 Renaming Attributes and Joined Tables
5.4.5 Aggregate Functions and Grouping
5.5Insert, Delete, and Update Statements in SQL
5.5.1 The INSERT Command
5.5.2 The DELETE Command

5.5.3 The Update Command
5.6 Views (Virtual Tables) in SQL
5.6.1 Concept of a View in SQL
5.6.2 Specification of views in SQL
5.6.3 View Implementation and View Update
5.7 Additional Features of SQL

Prescribed Books:

1. "Fundamentals of Database Systems" by R.Elmasri and S.Navathe

Reference Books:

1. "Database System Concepts" by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010.

2. "Database Management Systems" by Raghu Ramakrishnan, NcGrawhill,2002
3. "Prinicples of Database Systems" by J.D.Ullman
4. "An Introduction to Database Systems" by Bipin C Desai
5. "Fundamentals of Relational Database Management Systems" by S.Sumathi, S. Esakkirajan, Springer Publications

Student Activity:

1. Create your College database for placement purpose.
2. Create faculty database of your college with their academic performance scores

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA 10

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam, A.P.)

COMPUTER SCIENCE	**CSC P52**	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – V **Credits – 2**

PAPER – V – DATA BASE MANAGMENT SYSTEMS LAB **30Hrs**

1. Create a Department table with the following fields: DEPTNO, DNAME and LOCATION.
2. Describe the structure of 'DEPT' table.
3. Insert values into 'DEPT' table.
4. Select all values from 'DEPT' table.
5. Create EMPLOYEE table with the following fields: EMPNO, ENAME, JOB, MGR, HIRE DATE, SALARY, COMMISTION and DEPTNO.
6. Describe the structure of 'EMP' table.
7. Insert the values into 'EMP' table.
8. Select all the values from 'EMP' table.
9. Create table GRADE with the following fields: GRADE, LOSAL and HISAL.
10. Insert values into 'GRADE' table.
11. Select all the values from 'GRADE' table.
12. List all the employee information for department 10.
13. Find out the names of all employees.
14. Retrieve the list of names and salary of all employees.
15. Find the names of employees who have a salary equal to RS3000.
16. List the employee whose names start with 's'.
17. List the employee names ending with 's'.
18. List the names of employees whose names have exactly 5 characters.
19. List the employee names having D as the second character.
20. List the employee names having two A'S in their name.
21. Display all employee names which have 'TH' or 'LL' in them.
22. List out EMPNO, ENAME and SALARY of the employees whose salary is between 1500 and 2000.
23. List the names of employees who belong to department 10, 20.
24. List employee number of the employees who don't have the name of 'FORD', 'JAMES' (OR)'JONES'.
25. Display all the different job types.
26. Retrieve all rows from EMP table for department 30 and order by name.
27. List the employee names and HIREDATES in descending order of HIREDATE.
28. Retrieve department names and no's in ascending order of DNAME.
29. List all employees' information that has a manager.
30. List name of the employees, job and commission of those employees who do the job of clerk or salesman and get no commission.
31. List the names and jobs of all clerks in department 20.
32. Display current data & time.
33. Display the concatenated string.
34. Display string 'SMITH' of first character as capital letter.
35. Display the length of a string 'SALESMAN'.
36. Display the string 'SALESMAN' in lower case.
37. Display all department names in upper case.

38. Display the value using ABS.
39. Displays the value using CEIL.
40. Display the value using FLOOR.
41. Display the value using POWER.
42. Display the value using SQRT.
43. Display sysdate by adding 3 months and minus 2 months.
44. Display last day for given date.
45. Display month between two dates.
46. Display next day for given date.
47. Display day of the current date.
48. Display all employees who were hired during 1982.
49. List the no of employees working with company.
50. List the no of jobs available in the emp table.
51. List the total salaries payable to employees.
52. List the maximum salary of employee working as a salesman.
53. List the minimum salary of employee from employee table.
54. List the avg salary from Employee table.
55. List the avg salary and no of employees working in the deptno 20.
56. Display the total salary for each department.
57. List the average salary of each job in the EMP table.
58. List the maximum salary for each department.
59. Find the total salary for each job of each department.
60. Display the no of employee in each department.
61. To find the maximum salary of each department, but show only the department that has a maximum salary of more than RS 2900.
62. List the total salary, maximum, minimum and average salary of employees job wise for department no and display only those rows having average salary greater than 1000.
63. Display the job tittle and total monthly salary for each job title with a total pay role exceeding RS 5000 and excludes sales people and sorts the list by the total monthly salary.
64. Display the different job in department 20 and 30.
65. List the employee no and names working in department no 20 and 30.
66. Display the different jobs in department 20 and 30 with union all.
67. List the jobs common to department 20 and 30.
68. List the jobs which are common to department 20 only.
69. Display all the employee names dept no's and dept names.
70. Display all employees in 'DALLAS'.
71. Display the employee names where salary is greater than employee no 7566.
72. Display the employee whose job tittle is same as that of employee 7369.
73. Display the employee name where salary is equal to the minimum salary.
74. Find the employees who earn the same salary as the minimum salary for departments.
75. To display all the departments that has a minimum salary greater than that of department 20.
76. Display the highest paid employee of each department.
77. Create a table client_master which the following fields Client_no,name, address, city and state.
78. Insert the values into "client_master "table
79. Describe the structure of 'client _master ' table

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA 10
(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam, A.P.)

COMPUTER SCIENCE	**CSC T51**	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – V **Credits: 3**

PAPER – VI - SOFTWARE ENGINEERING

UNIT–I: **12 Hrs**

Introduction: The Software Engineering – Evolution and impact, Software Development Projects, Software Process and Project Metrics, Emergence of Software Engineering, Computer Systems Engineering, **Software Life cycle models**: Need for life Cycle model, classical waterfall model, Iterative waterfallmodel,V-model, Prototyping model, Evolutionary model, Spiral model, Comparison of different life cyclemodels.

UNIT–II: **12 Hrs**

Software Project Management: Responsibilities of a Software Project Manager, Project planning, Metricsfor Project size estimation and scheduling.

Requirement Analysis: Requirements gathering and analysis, Software Requirements Specification - contents of the SRS document, Functional requirements, Traceability, Characteristics of good SRS DOCUMENT and Organization of the SRS document.

UNIT-III: **12 Hrs**

Software Design: Desirable characteristics of a good software design, Cohesion and coupling, Layer Arrangement of Modules, Function-oriented design and Object-oriented design.

Function-oriented software Design: Overview of SA/SD methodology, structured analysis, Data Flow Diagrams, Structured Design and Detailed Design.

UNIT-IV: **12 Hrs**

Unified Modeling Language: Overview of Object-oriented concepts, Unified Modeling Language, UML diagrams, use case model class diagrams, Interaction diagrams, Activity diagrams, state chart diagrams

User Interface Design: Characteristics of good user interface design, Basic concepts, Types of userinterfaces, component-based GUI development, A user interface Design Methodology

UNIT-V: **12 Hrs**

Coding and Testing: Coding standards & guidelines, code review, testing, unit testing, Black-box testing, White-box testing, Debugging, Integration testing, System testing.

Software Reliability and Quality Management: Software Reliability, Statistical Testing, Software Quality.

Text Book: Fundamentals of Software Engineering **-**By RAJABMALL –PHI Third Edition

REFERENCE BOOKS:

1. Roger Pressman S., “Software Engineering: A Practitioner's Approach”, 7th Edition, McGraw Hill, 2010.
2. Sommerville, “Software Engineering”, Eighth Edition, Pearson Education, 2007.

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COMPUTER SCIENCE	**CSC P51**	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – V Credits: 2

PAPER – VI - SOFTWARE ENGINEERING LAB **30Hrs**

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

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COMPUTER SCIENCE	CSC TCLS63	2017-18 2018-19	B.Sc (MPCS, MECS, MSCA, MSCS)

SEMESTER – VI **Credits: 3**

Paper-VII – Elective – I.A

OPERATING SYSTEMS

UNIT – I **12 Hrs**

1. Operating System

1.1 Introduction
1.2 Operating Systems Objectives and functions,
1.3 Computer System Architecture,
1.4 OS Structure,
1.5 OS Operations.
1.6 Evolution of Operating Systems
1.7 Types of operating system
1.7.1 Simple
1.7.2 Batch
1.7.3 Multi programmed
1.7.4 Time shared
1.7.5 Parallel
1.7.6 Distributed Systems
1.7.7 Real-Time Systems
1.7.8 Operating System services.

UNIT – II **12 Hrs**

2. Process and CPU Scheduling

2.1 Process concepts
2.1.1 The Process
2.1.2 Process State
2.1.3 Process Control Block
2.1.4 Process communication.
2.2 Threads.
2.3 Process Scheduling
2.3.1 Scheduling Queues
2.3.2 Schedulers
2.3.4 Context Switch
2.3.5 Pre-emptive Scheduling
2.3.4 Dispatcher
2.3.5 Scheduling Criteria
2.3.6 Scheduling algorithms
2.3.7 Case studies: Linux, Windows
2.3.8 Process Synchronization
2.3.9 The Critical section Problem
2.3.10 Synchronization Hardware
2.3.11 Semaphores
2.3.12 Classic Problems of Synchronization

2.3.13 Monitors.

UNIT – III **12 Hrs**

3. Memory Management and Virtual Memory

3.1 Logical & physical Address Space
3.2 Swapping,
3.3Contiguous Allocation,
3.3 Paging-Structure of Page Table.
3.4 Segmentation,
3.5Segmentation with Paging,
3.6Virtual Memory,
3.7 Demand Paging,
3.8 Performance of Demanding Paging
3.9 Page Replacement
3.10 Page Replacement Algorithms
3.11 Allocation of Frames.

UNIT – IV **12 Hrs**

4. File System Interface

4.1 The Concept of a File
4.2 Access methods
4.3 Directory Structure
4.4 File System Mounting
4.5 File Sharing
4.6 Protection
4.7 File System Structure
4.8 Mass Storage Structure
4.8.1 Overview of Mass Storage Structure
4.8.2 Disk Structure
4.8.3 Disk Attachment
4.8.4 Disk Scheduling

UNIT – V **12 Hrs**

5. Deadlocks

5.1 System Model
5.2 Deadlock Characterization
5.3 Methods for Handling Deadlocks
5.4 Deadlock Prevention
5.5 Deadlock Avoidance
5.6 Deadlock Detection and Recovery from Deadlock

Textbook

"Operating System Concepts"-Silberschatz, Galvin, Gagne-Sixth edition –eight Edition-John Willey& Sons INC

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.

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SEMESTER – VI **Credits:2**

Paper-VII – Elective – I.A

Operating Systems Lab **30Hours**

1. Write c program to implement the Process system calls.
2. Write a 'c' program for I/O system calls.
3. Write the program to implement CPU & scheduling algorithm for first come first serve scheduling.
4. Write a program to implement cpu scheduling algorithm for shortest job first scheduling.
5. Write a 'C' program to perform priority scheduling.
6. Write a program to implement cpu scheduling for Round Robin Scheduling.
7. To implement first fit, best fit algorithm for memory management.

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COMPUTER SCIENCE	CSH TCLS64	2017-18 2018-19	B.Sc (MPCS, MECS, MSCA, MSCS)

SEMESTER – VI Credits: 3

PAPER – VII - Elective – I.B COMPUTER NETWORKS

UNIT-I **12 Hrs**

Introduction to Networking

1.1 Uses of computer networks
1.2 Types of computer networks
1.3 ISO OSI reference model
1.4 Multiplexing
1.4.1 Frequency Division Multiplexing
1.4.2 Wave Length Division Multiplexing
1.4.3 Time Division Multiplexing
1.5 Guided media
1.5.1 Twisted pair cable
1.5.2 Coaxial cable
1.5.1 Fiber optics
1.6 Unguided media
1.6.1 Radio waves
1.6.2 Micro waves
1.6.3 Satellites
1.7 Switching
1.7.1 Circuit switching
1.7.2 Packet switching
1.7.3 Message switching

UNIT-II **12 Hrs**

Data Link Layer

2.1 Design issues of data link layer
2.2 Data link protocols
2.2.1 unrestricted simplex protocol
2.2.2 simplex stop and wait protocol
2.2.3 one bit sliding window protocol
2.3 Bluetooth
2.4 Error detection and correction

UNIT-III **12 Hrs**

Network Layer

3.1 Introduction
3.2 Design issues of network layer
3.3 Virtual vs Datagram routing algorithms
3.4 Shortest path routing algorithm
3.5 Flooding
3.6 Distance vector routing algorithm
` 3.7 Congestion control algorithms

UNIT-VI **12 Hrs**

Transport Layer

4.1 Introduction
4.2 Design issues of Transport Layer
4.3 Elements of Transport Protocols
4.3.1 Addressing
4.3.2 Connection Establishment
4.3.3 Connection Release
4.3.4 Flow control and Buffering
4.3.5 Multiplexing
4.3.6 Crash Recovery
4.4 Remote Procedure Call
4.5 User Datagram Protocol
4.6 Transmission Control Protocol

UNIT-V **12 Hrs**

Application Layer

5.1 Domain Name system
5.2 Email architecture and services
5.3 User agent sending and receiving Email
5.4 WWW Architectural Overview
5.5 Client side Server side URL
5.6 Cookies
5.7 Cryptography

Text book :

1. Computer Networks-Andrew.S.Tanenbaum ,Pearson Edu Asia Fourth edision.
2. Introduction to Data Communications and Networking-Behrouz Forouzan,Tata McGraw Hill Edition

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SEMESTER – VI **Credits: 2**

PAPER – VII (Elective – I.B)

Computer Networks Lab **30Hrs**

1. Implementation of Stop and Wait Protocol
2. Implementation of Sliding Window Protocol
3. Study of Socket Programming and Client – Server model
4. Write a code simulating ARP /RARP protocols.
5. Write a code simulating PING and TRACEROUTE commands
6. create a socket for HTTP for web page upload and download.
7. Write a program to implement RPC (Remote Procedure Call).
8. Implementation of Subnetting.
9. Applications using TCP and UDP Sockets like DNS, SNMP and File Transfer
10. Applications using TCP Sockets like

A) Echo client and echo server
B) Chat
C) File Transfer

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COMPUTER SCIENCE	CSC TEL62	2017-18 2018-19	B.Sc (MPCS, MECS, MSCA, MSCS)

Semester: VI **Credits: 3**

PAPER: VII (Elective – I.C) Web Technologies

UNIT-1 **10 Hrs**

1.1 Introduction to XHTML
1.2 Cascading style sheets
1.2.1 Inline style sheets
1.2.2 Embedded style sheets
1.2.3 External style sheets
1.3 Java scripts
1.3.1 Introduction to scripting
1.3.2 Control statements
1.3.3 Functions
1.3.4 Arrays
1.3.5 Objects

UNIT-II **10 Hrs**

Dynamic HTML
2.1 Introduction
2.2 Object model and collection
2.2.1 object model collection
2.2.2 dynamic style
2.2.1 frame collection
2.3 Event model
2.3.1 Onclick and Onload Event
2.3.2 Mouse Events
2.3.3 Onfocus and Onblur Event

UNIT-III **12 Hrs**

3.1 XML
3.1.1 Introduction to xml
3.1.2 how to write a xml document
3.1.3 elements and attributes
3.1.4 comments in xml
3.1.5 namespace in xml
3.1.6 xml css
3.1.7 advantages of xml
3.1.8 uses of xml
3.1.9 validating xml schema
3.1.10 data types
3.1.11 simple types
3.1.12 complex types
3.2 XSLT
3.2.1 XSLT introduction
3.2.2 XSL languages
3.2.3 XSLT transform
3.2.4 XSLT <template>

3.2.5 XSLT <value-of>
3.2.6 XSLT <for-each>
3.2.7 XSLT <sort>
3.2.8 XSLT <if>
3.2.9 XSLT <choose>

UNIT-IV **14 Hrs**

JDBC

4.1 Introduction to jdbc
4.2 How jdbc works
4.3 Jdbc architecture
4.4 Jdbc driver types
4.5 Jdbc connections
4.6 Jdbc statements
4.7 Jdbc result sets
4.8 Jdbc examples
4.8.1 Create database
4.8.2 Select database
4.8.3 Drop database
4.8.4 Create table
4.8.5 Drop table
4.8.6 Insert records
4.8.7 Select records
4.8.8 Update records
4.8.9 Delete records

UNIT-V **14 Hrs**

5.1 Servlets introduction
5.2 How to write servlet
5.3 How to execute servlet
5.4 Life cycle of servlet
5.5 Invoking servlet using Html
5.6 JSF introduction
5.7 Basics of JSF
5.8 Life cycle of JSF

Text Books

1. Web Technologies by A.A.Puntambekar
2. Web Technologies from oxford university press by uttam kumar roy
3. Internet and WWW how to program by Harvey M.deitel and paul J.deital ,pearson education

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COMPUTER SCIENCE	CSC PEL62	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

Semester: VI **Credits: 2**

PAPER: VII (ELECTIVE – I.C)

WEB TECHNOLOGIES LAB **30Hrs**

1 Write a html program using ordered list,unorderedlist and nested list.
2 Write a html program using the form components.
3 Develop a javascript to determine whether the given number is a “PERFECT NUMBER “or not.
4 Develop a java script to generate “ARMSTRONG NUMBERS” between the ranges 1 to 100.
5 Write a java script that reads an integer and displays whether it is a prime number or not.
6 write a java script which accepts the text in lower case and displays the text in upper case
7 Write a java script to demonstrate two dimensional arrays.
8 Write a java script program for user name and password validation using onclick event.

9 Write a jdbc program to insert the records into a specified database by accepting input from keyboard.
10 Write a jdbc program to update the records into a specified database
11 Write a jdbc program to delete the records into a specified database
12 Write a jdbc program to retrieve the records along with column names from a specified database by accepting input from keyboard.
13 Create a jdbc program to call stored procedures using callable statement interface.

14 Write a servlet program to display a “WELCOME” message on the client system.
15 Create a servlet that display the current date and time.

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SEMESTER – VI **Credits: 3**

Paper-VIII: Elective – II (CLUSTER A – 1) Foundations of Data Science--

UNIT I - Introduction to Data Science **12 Hrs**

1.1 Data science process
1.1.1 Roles
1.1.2 Stages in data science project
1.2 Loading data into R
1.2.1 Working with data from files
1.2.2 Working with relational databases
1.3 Exploring data
1.3.1 Using summary statistics to spot problems
1.3.2 Spotting problems using graphics and visualization
1.4 Managing data
1.4.1 Cleaning
1.4.2 Sampling for modelling and Validation

UNIT II - Modelling Methods **12 Hrs**

2.1 Choosing and evaluating models
2.1.1 Mapping problems to machine learning
2.1.2. Evaluating clustering models
2.2 Validating models
2.2.1 Identifying Common Model Problems
2.2.2 Quantifying Model Soundness
2.3 Cluster analysis
2.3.1 Distances
2.3.2 Preparing the data
2.3.3 K – means Algorithm

UNIT III - Introduction to R Language **12 Hrs**

3.1 Reading and getting data into R
3.1.1 Viewing named objects
3.1.2 Types of data items and structure of data items
3.1.3 Working with history commands
3.1.4 Saving our working R
3.2 Working with objects
3.2.1 Manipulating objects
3.2.2 Viewing objects
3.2.3 Constructing objects

UNIT IV – Tables & Graphics **12 Hrs**

1.1 Summary tables
1.1.1 Making contingency tables
1.1.2 Selecting parts of a table object
1.1.3 Converting an object into a table
1.1.4 Testing for table objects
1.2 Manipulating data and extracting componenets
1.2.1 creating data for complex analysis

1.2.2 summarizing data
1.3 Introduction to graphical analysis
1.3.1 Box-Whisker Plots
1.3.2 Scatter plots
1.3.3 Pairs plots
1.3.4 Line charts
1.3.5 Pie charts
1.3.6 Bar charts

UNIT V - Delivering Results **12 Hrs**

5.1 Displaying multivariate data
5.2 Plot () function
5.3 Matrix plots
5.4 Multiple plots in one window
5.5 Exporting graph
5.6 Using graphics parameters

Prescribed Text books:

1. Nina Zumel, John Mount, "Practical Data Science with R", Manning Publications, 2014.(UNIT I,II)
2. Mark Gardener, "Beginning R - The Statistical Programming Language", John Wiley & Sons, Inc., 2012.(UNIT III,IV.V)

Reference Books:

1. Jure Leskovec, Anand Rajaraman, Jeffrey D.Ullman, "Mining of Massive Datasets", Cambridge University Press, 2014.
2. W. N. Venables, D. M. Smith and the R Core Team, "An Introduction to R", 2013.
3. Tony Ojeda, Sean Patrick Murphy, Benjamin Bengfort, Abhijit Dasgupta, "Practical Data Science Cookbook", Packt Publishing Ltd., 2014.
4. Nathan Yau, "Visualize This: The FlowingData Guide to Design, Visualization, and Statistics", Wiley, 2011.
5. Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.

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SEMESTER – VI **Credits: 2**

Paper-VIII: Elective – II (CLUSTER A – 1)

DATA SCIENCE LAB **30Hrs**

1. Create a vector in R and perform operations on it (arithmetic operations, combining vectors, retrieving elements of vector, assign names to vector elements).
2. Create integer, complex, logical, character data type objects in R and print their values and their class using print and class functions.
3. Create a matrix of values in R and extract data from matrix. (Ex. Second row third elements etc) find transpose of matrix and combine two matrices using Rbind and Cbind functions.
4. Create a list in R and perform operations on it like list slicing, sum and mean functions, head and tail functions and finally delete list using rm() function.
5. Create data frame in R and perform operations on it.
6. Import data into R from text and excel files using read.table () and read.csv () functions.
7. Print name of your current working directory and set working directory to your directory in R.
8. Write code in R to find out whether number is prime or not.
9. Print numbers from 1 to 100 using while loop and for loop in R.
10. Create a factor in R by specifying levels. And print it then modify some values in it.
11. Find factorial of a number using recursion in R.
12. Perform arithmetic operations in R using switch case.
13. Create a dataset and draw different types of graphs using plot, boxplot, histogram, stripchart, line functions.
14. Demonstrate Kmeans clustering for any dataset of your choice.
15. Demonstrate Timeseries for any dataset of your choice

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SEMESTER – VI **Credits: 3**

Paper-VIII: Elective – II (CLUSTER A – 2)

BIG DATA TECHNOLOGY

.

UNIT-I: **12 Hrs**

Introduction to big data: What is Big Data, Structuring Big Data -Types of Big Data, Elements of big data-Volume, Velocity, Variety, Veracity, Big Data Analytics- Advantages of Big Data Analytics, Big Data Applications.

UNIT-II: **12 Hrs**

Introduction to Hadoop: What is Hadoop, Understanding distributed systems & Hadoop, Comparing SQL databases and Hadoop, Understanding Map Reduce-scaling word count program manually, scaling word count program in Map reduce.

UNIT-III **12 Hrs**

Hadoop Eco System, HDFS-HDFS Architecture, concept of blocks in HDFS-namenode, datanode, secondary namenode, job tracker, task tracker). Introducing HBase-HBase architecture, Regions, storing Big Data with HBase, Why hive, pig, scoop, zookeeper, flume, oozie.

UNIT-IV **12 Hrs**

Working with files in HDFS-Basic file commands, reading & writing to HDFS programmatically, Anatomy of Map Reduce program-Hadoop data types, Mapper, Reducer, Partitioner, Combiner, word counting with pre-defined mapper and reducer, Reading & Writing-input format, output format.

UNIT-V: **12 Hrs**

Background of YARN, limitations of map reduce, advantages of YARN, YARN architecture, working of YARN. Introducing Hive, Hive Services, Hive Variables, Hive Queries, Data types, Hive Built in functions, Hive - DDL, DML, and Data Retrieval Queries

TEXT BOOKS:

1. BIG DATA (covers hadoop2, map reduce, Hive, Yarn, Pig, R and Data Visualization) Black Book , DreamTech Press.
2. Hadoop in Action by Chuck Lam, DreamTech Press.

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SEMESTER – VI **Credits: 2**

Paper-VIII: Elective – II (CLUSTER A – 2)BIG DATA LAB--

1. Implement the following Data structures in Java.

a)Linked Lists b) Stacks c) Queues d) Set e) Map

2. (i)Perform setting up and Installing Hadoop in its three operating modes:Standalone, Pseudo distributed, Fully distributed.

(ii) Use web based tools to monitor your Hadoop setup.

3. Implement the following file management tasks in Hadoop

Adding files and directories retrieving files Deleting files Hint: A typical Hadoop workflow creates data files (such as log files) elsewhere and copies them into HDFS using one of the above command line utilities.

4. Run a basic Word Count Map Reduce program to understand Map Reduce Paradigm.

5. Write a Map Reduce program that mines weather data. Weather sensors collecting data every hour at many locations across the globe gather a large volume of log data, which is a good candidate for analysis with MapReduce , since it is semi structured and record-oriented.

6. 6. Implement Matrix Multiplication with Hadoop Map Reduce.

7. Install and Run Hive.

8. Use Hive to create, alter, and drop databases, tables, views, functions and indexes.

9. Use hive to run DML and data retrieval queries.

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COMPUTER SCIENCE	CSC TCLS610	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – VI **Credits: 3**

Paper-VIII: Elective – II (CLUSTER B – 1)Distributed Systems---

UNIT I **12 Hrs**

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

UNIT II **12 Hours**

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, Call Semantics, Communication Protocols and Client Server Binding.**UNIT III** **14 Hrs**

Introduction, Design and implementation of DSM system, Granularity and Consistency Model, advantagesof DSM,ClockSynchronization,EventOrdering,Mutual exclusion, Deadlock, Election Algorithms.**UNITIV**

10 Hrs

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

UNIT V **12 Hrs**

File Models, File Accessing Models, File Sharing Semantics, File Caching Schemes, File Replication, Atomic Transactions, Cryptography, Authentication, Access control and Digital Signatures.

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.

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COMPUTER SCIENCE	CSC TCLS65	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – VI **Credits: 3**

Paper-VIII: Elective – II (CLUSTER B – 2)Cloud Computing

Unit 1 **10 Hrs**

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

Unit II **12 Hrs**

Cloud scenarios – Benefits: scalability, simplicity, vendors, security. Limitations – Sensitive information - Application development – Security concerns - privacy concern with a third party - security level of third party - security benefits Regularity issues: Government policies

Unit III **14 Hrs**

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 – Services andBenefits

Unit IV **12 Hrs**

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 **12 Hrs**

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

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

COMPUTER SCIENCE	CSC PCLS65	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – VI **Credits: 3**

Total Hrs: 60

Paper-VIII: Elective – II (CLUSTER B – 2)

CLOUD COMPUTING LAB

1. Create an word document of your class time table and store locally and on cloud with doc and pdf format.

2. Create a spread sheet which contains employee salary information and calculate gross and total salary using formula

DA=10%OF BASIC,HRA=30%OF BASICPF=

10% OF BASIC IF BASIC<=3000 12% OF

BASIC IF BASIC>3000 TAX=10% OF BASIC IF

BASIC<=1500

11% OF BASIC IF BASIC>1500 AND BASIC<=2500

12% OF BASIC IF BASIC>2500

NET_SALARY=BASIC_SALARY+DA+H RA-PF-TAX

3. Prepare a ppt on cloud computing-introduction, models, services and architecture
4. Create your resume in a neat format using Google and Zoho cloud

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COMPUTER SCIENCE	CSC TCLS66	**2017-18** / **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – VI **Credits: 3**

Paper-VIII: Elective – II (CLUSTER B – 3)GRID COMPUTING

UNIT I **12 Hrs**

CONCEPTS AND ARCHITECTURE

Introduction-Parallel and Distributed Computing Cluster Computing-Grid Computing- Anatomy and Physiology of Grid- Web and Grid Services-Grid Standards - Trends, Challenges and applications.

UNIT II **12 Hrs**

GRID MONITORING

Grid Monitoring Architecture (GMA) - An Overview of Grid Monitoring Systems- R-GMA –Grid ICE – MDS-Service Level Agreements (SLAs) -Other Monitoring Systems- Ganglia, Grid Mon, Hawkeye and Network Weather Service.

UNIT III **12 Hrs**

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- Overview of Condor, SGE, PBS, LSF.

UNIT IV **12 Hrs**

DATA MANAGEMENT AND GRID PORTALS

Data Management-Categories and Origins of Structured Data-Data Management Challenges-Architectural Approaches-Collective Data Management Services-Grid Portals-Generations of Grid Portals.

UNIT V **12 Hrs**

GRID MIDDLEWARE: List of globally available Middleware's - Case Studies-Recent version of Globus Toolkit and gLite - Architecture, Components and Features. 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; Firstedition, 2003

COMPUTER SCIENCE	CSC PCLS66	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – VI **Credits: 2**

Paper-VIII: Elective – II (CLUSTER B – 3)

GRID COMPUTING LAB

1. Program to create one grid resource with three machines
2. Program to create one or more Grid users. A Grid user contains one or more Gridlets
3. Program to shows how two GridSim entities interact with each other ; main(ie example3) class creates Gridlets and sends them to the other GridSim entities, i.e. Test class
4. Program shows how a grid user submits its Gridlets for tasks to one grid resource entity
5. Program to show how a grid user submits its Gridlets for task to many grid resource entities
6. Program to show how to create one or more grid users and submits its Gridlets or task to many grid resource entities
7. Program to creates one Grid resource with three machines

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COMPUTER SCIENCE	**CSC TCLS67**	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – VI **Credits: 3**

Paper-VIII: Elective – II (CLUSTER C – 1) MOBILE COMPUTING

UNIT I **12 Hrs**

Introduction

Mobile Communications, Mobile Computing – Paradigm, Promises/Novel Applications and Impediments and Architecture; Mobile and Handheld Devices, Limitations of Mobile and Handheld Devices. GSM – Services, System Architecture, Radio Interfaces, Protocols, Localization, Calling, Handover, Security, New Data Services, GPRS.

(Wireless) Medium Access Control (MAC) : Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA, Wireless LAN/(IEEE 802.11)

UNIT –II **12 Hrs**

Mobile Network Layer

IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Location Management, Registration, Tunneling and Encapsulation, Route Optimization, DHCP

UNIT – III **12 Hrs**

Mobile Transport Layer

Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Transport Layer Protocolsfor Mobile Networks. Database Issues : Database Hoarding & Caching Techniques, Client-Server Computing & Adaptation, Transactional Models, Query processing, Data Recovery Process & QoS Issues.

UNIT IV **12 Hrs**

Data Dissemination and Synchronization

Communications Asymmetry, Classification of Data Delivery Mechanisms, Data Dissemination, Broadcast Models, Selective Tuning and Indexing Methods, Data Synchronization – Introduction, Software, and Protocols.

UNIT V **12 Hrs**

Mobile Ad hoc Networks (MANETs)

Introduction, Applications & Challenges of a MANET, Routing, Classification of Routing Algorithms, Algorithms such as DSR, AODV, DSDV, etc. , Mobile Agents, Service Discovery.

Protocols and Platforms for Mobile Computing : WAP, Bluetooth, XML, J2ME, JavaCard, PalmOS, Windows CE, SymbianOS, Linux for Mobile Devices,Android.

Text Books

- Jochen Schiller, “Mobile Communications”, Addison-Wesley, Second Edition, 2009.
- Raj Kamal, “Mobile Computing”, Oxford University Press, 2007, ISBN: 0195686772

Reference Book

- ASOKE K TALUKDER, HASAN AHMED, ROOPA R YAVAGAL, “Mobile Computing, Technology Applications and Service Creation” Second Edition, Mc Graw Hill.
- UWE Hansmann, Lother Merk, Martin S. Nocklous, Thomas Stober, “Principles of Mobile Computing,” Second Edition, Springer.

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COMPUTER SCIENCE	**CSC PCLS67**	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – VI **Credits: 3**

Total Hrs: 60

Paper-VIII: Elective – II (CLUSTER C – 1)
MOBILE COMPUTING LAB

1. To check orthogonality of two codes.
2. Generation of Walsh codes.
3. To implement Code Division Multiple Access (CDMA).
4. To study frequency reuse.
5. To create a MIDlet suite with two MIDlets.
6. To study ChoiceGroup class and its implementation in J2ME.
7. To study Canvas class and its implementation in J2ME.
8. Write WML page using various tags such as select and option tags.
9. Write a WML page to display an image and to accept input from the user.

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COMPUTER SCIENCE	**CSC TCLS68**	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – VI **Credits: 3**

Paper-VIII: Elective – II (CLUSTER C – 2)
MOBILE APPLICATION DEVELOPMENT

UNIT-1 **12 Hrs**

What is android, android versions android features, android architecture, android devices in the market, android developers community obtaining the required tools, android sdk, installing android sdk tools, configuring android sdk manager, Arabic build system for android, android library projects and third party libraries, debugging android applications.

UNIT-2 **12 Hrs**

Components, manifests and resources:
The activity component, the service component, the broadcast receiver component, the content provider component, the application component, application architecture, intents.
The android application manifest:
The manifest element, Google play filters and permissions, intent filtering
Resources and Assets:
Advanced string resources, localization using resource qualifiers, using assets.

UNIT-3 **12 Hrs**

Components of a screen:
Views and view groups, linear layout, absolute layout table layout, relative layout, frame layout, scroll view
Utilizing action bar:
adding action items to the action bar, customizing the action items and application icon
Using basic views:
Textview, button, image view, image button, edit text, checkbox, radio button, radio group, toggle button, auto complete text view, progress bar, time picker, date picker, list view, grid view, spinner view.

UNIT-4 **12 Hrs**

Fragments:
what is fragment, adding fragment dynamically, life cycle of fragments, interaction between fragments.
Data persistence and content providers:
Saving and loading user preferences, accessing preferences using an activity, storing, retrieving and modifying the preference values, saving internal storage, storing internal storage, android database design, creating and upgrading databases, implementing query methods.

UNIT-5 **12 Hrs**

Services and background tasks:
What is a service, service types, service creation and destruction, starting a service, binding a service, stopping a service, running in background, communicating with service.
Publishing android applications:
Preparing for publishing, versioning your publication, digitally signing your android application.
Text books:
1. Beginning Android 4 application development by wei-meng, LEC XYROX publications
2. Android Programming, pushing the limits by Wiley ,Erik Hellman.

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COMPUTER SCIENCE	CSC PCLS68	2017-18 2018-19	B.Sc (MPCS, MECS, MSCA, MSCS)

SEMESTER – VI **Credits: 2**

Paper-VIII: Elective – II (CLUSTER C – 2)Mobile Application Development Lab

1) Create an application to demonstrate
a) TextView,
b) EditText,
c) Button.
2) Create an application to demonstrate
a) spinner,
b) Progress bar
c) Webview
3) Create an application to demonstrate
a) ListView
b) GridView.
4) Create an application to demonstrate Radio buttons and Checkbox.
5) Create an application to demonstrate ImageView and ImageButton.
6) Create an application that will change color of the screen, based on selected options from the menu.
7) Create an application that will read phonebook contacts using content providers and display in list.
8) a) Create an application to call specific entered number by user in the EditText.
b) Create an application to send SMS to specific entered number by user in the EditText.
9) Create an application that will play a media file from the memory card.
10) Create an application to make Insert, update, Delete and retrieve operation on the SQLite Database.
11) Create an application to take picture using native application.
12) Create an application to pick up any image from the native application gallery and display it on the screen.
13) Create an application that will on/off the Bluetooth, Wi-Fi, mobile data on button click. (Use different buttons for each click.)
14) Create sample application with registration and login module using shared preferences. (Check username and password)

- On successful login, go to next screen. And on failing login, alert user using Toast.
- Also pass username to next screen.

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COMPUTER SCIENCE	**CSC TCLS69**	**2017-18** **2018-19**	**B.Sc (MPCS, MECS, MSCA, MSCS)**

SEMESTER – VI **Credits: 3**

Paper-VIII: Elective – II (CLUSTER C – 3)

Satellite Communications

UNIT -I: **12 Hrs**

Cellular telephony: Frequency – reuse principle, transmitting, receiving, roaming, first generation, second generation, third generation.

Satellite networks: Orbits, Foot print, categories of satellites – GEO, MEO, LEO satellites.

UNIT -II: **12 Hrs**

Satellite Sub-Systems: Attitude and Orbit Control system, TT&C subsystem, Attitude Control subsystem, Power systems, Communication subsystems, Satellite Antenna Equipment. Satellite Link: Basic Transmission Theory,

UNIT -III: **12 Hrs**

Propagation Effects: Introduction, Atmospheric Absorption, Cloud Attenuation, Tropospheric and Ionospeheric Scintillation and Low angle fading, Rain induced attenuation, rain induced cross polarization interference. Multiple Access: Frequency Division Multiple Access (FDMA), Time Division Multiple Access (TDMA) - Frame Structure, Burst Structure, Satellite Switched TDMA,

UNIT -IV: **12 Hrs**

Satellite Packet Communications: Message Transmission by FDMA: M/G/1 Queue, Message Transmissionby TDMA, PURE ALOHA-Satellite Packet Switching, Slotted Aloha, Packet Reservation, Tree Algorithm. **UNIT -V:** **12 Hrs**

Introduction to Network Security: definitions, symmetric – key cryptography – traditional, simple, modern ciphers, Asymmetric – key cryptography – RSA, Diffie-Hellman.

TEXT BOOKS:

1. Data Communication and networking, 4th edition, Behrouz A. Forouzan, McGraw Hill
2 .Satellite Communications –Timothy Pratt, Charles Bostian, Jeremy Allnutt, 2nd Edition, 2003, John Wiley & Sons.

REFERENCE BOOKS:

1. Satellite Communications-Dennis Roddy, 2nd Edition, 1996, McGraw Hill.
2. Satellite Communications: Design Principles – M. Richcharia, 2nd Ed., BSP, 2003.
3. Digital Satellite Communications – Tri. T. Ha, 2nd Ed., MGH, 1990.
4. Fundamentals of Satellite Communications – K. N. Raja Rao, PHI, 2004.

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Computer Science	**CSH T11**	**2017-18** **2018-19**	**B.SC(Honors)**

SEMESTER – I **Credits – 4**

PROGRAMMING FUNDAMENTALS

UNIT – I Introduction to Programming **10 Hrs**

1.1 Introduction to Algorithms and Programming Languages:

1.1.1 Algorithms, key features of algorithms

1.1.2 Flow charts
1.1.3 Pseudo code
1.1.4 Programming Languages - Generations of programming languages
1.1.5 structured programming languages.

1.2 Programming Constructs

1.2.1 Structure of C program
1.2.2 Keywords, identifiers
1.2.3 Basic data types
1.2.4 Constants and variables
1.2.5 Operators
1.2.6 Input-Output statements

UNIT – II **20 Hrs**

2.1 Control Structures

2.1.1 Need of control structures
2.1.2 Branching Control Structures
2.1.3 Looping Control Structures
2.1.4 Jumping Statements

2.2 Arrays

2.2.1 Declaration of arrays
2.2.2 Single, Two-dimensional arrays
2.2.3 Operations on arrays
2.2.3.1 Accessing Single, Two dimensional Arrays
2.2.3.2 Insertion into unsorted array
2.2.3.3 Deletion from unsorted array.

UNIT - III **15 Hrs**

3.1 Functions

3.1.1 Function declarations
3.1.2 Function definition
3.1.3 Calling a function
3.1.4 Return statement
3.1.5 Passing parameters
3.1.6 Recursion
3.1.7 Types of functions
3.1.8 Categories of functions

3.2 Passing Arrays to functions
3.3 Storage classes
3.4 String and Character functions.

UNIT – IV **10Hrs**

4.1 Pointers

4.1.1 Introduction to Pointers
4.1.2 Declaring pointer variables
4.1.3 Pointer expressions and pointer arithmetic
4.1.4 Pointers with Arrays and Functions.

4.2 Structures

4.2.1 Introduction to Structures
4.2.2 Declaration- Initialization- Accessing the members of a structures
4.2.3 Nested structures
4.2.4 Arrays of structures
4.2.5 Structures and functions

4.3 Union

4.3.1 Introduction to Union
4.3.2 Difference between Structure and Union
4.3.3 Declaring, Accessing and Initializing a Union.

UNIT – V: **5 Hrs**

5.1 Files

5.1.1 Introduction to Files concept
5.1.2 File Handling Functions
5.1.3 Opening a file- Closing a file – Reading data from a file – Writing data to files
5.1.4 Error Handling during File Operations

Text Book: Computer Fundamentals and Programming in 'C', Reema Thareja, 2012, Oxford University Press.

Reference Books:

1. Mastering 'C', R Venu Gopal, S R Prasad, 2006, Tata McGraw – Hill Education.
2. Programming in ANSI C, E. Balagurusamy, V edition, Tata McGraw – Hill Education.

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Computer Science	CSH P11	2017-18 2018-19	B.SC(Honors)

SEMESTER – I **Credits: 2**

PROGRAMMING FUNDAMENTALS LAB **30Hrs**

1. Write a C program to calculate the expression: ((a*b)/c)+(a+b-c)
2. Write a C program to calculate $(a+b+c)^3$.
3. Program to convert temperature from
   a. Celsius to Fahrenheit.
   b. Fahrenheit to Celsius.
4. Write a C program to calculate the Compound Interest.
5. Program to convert Hours into seconds.
6. Write a C program to Fine Biggest of Three numbers.
7. Write a C program to read student marks in five subjects and calculate the Total, Average and Grade according to the following conditions:
   i. If average >=75 grade is _A‘.
   ii. If average >=60 and <75 grade is _B‘.
   iii. If average >=50 and <60 grade is _C‘.
   iv. Otherwise grade is _D‘.
   v. Check that marks in each subject >= 35.

8. Write a C program to find biggest of two numbers using Switch – Case.
9. Program to display number of days in given month using Switch – -Case.
10. Write a C program to check whether the given number is Prime or Not.
11. Write a program to
    i. Check whether given number is Palindrome or Not.
    ii. Find the Reverse of a given number.

12. Program to check whether a given number is
    i. Strong or Not.
    ii. Armstrong or Not.
    iii. Perfect or Not.

13. Write a C program to print Fibonacci Series.
14. Write a C Program to print Prime Numbers up to given range.

15. Write a program to print multiplication tables up to given range.
16. Write a C program to perform
    i. Matrix Multiplication.
17. Program to display Student Details using Structures.
18. Program to swap two numbers using different parameter passing techniques.
19. Write a C program to
    i. Write data into a File.
    ii. Read data from a File.

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Computer Science	**CSH P12**	**2017-18** **2018-19**	**B.Sc(Honors)**

SEMESTER – I **Credits: 2**

IT WORKSWHOP LAB **30Hrs**

1. Identifying the peripherals of a computer.
2. Disassembling and assembling of computer components
3. Installation of Windows 7
4. Hardware Troubleshooting.
5. Software Troubleshooting.
6. Web Browsers and Surfing the Web.
7. MS Word Orientation -

(i) Formatting document
(ii) Formatting text
(iii) Tables and Columns

8. Project abstract Features.
9. Excel Orientation -

(i) Formatting Excel Sheets
(ii) Excel Charts
(iii) Excel Functions

10. Power point Utilities

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Computer Science	**CSH T21**	**2017-18** **2018-19**	**B.Sc(Honors)**

SEMESTER – II **Credits: 4**

DATA STRUCTURES

Unit – I: Searching and Sorting **10Hrs**

1.1 Searching:
1.1.1 Binary search
1.1.2 Linear search
1.1.3 Time Complexity and Efficiency of searching algorithms.
1.2 Sorting:
1.2.1 Bubble sort
1.2.2 Selection sort
1.2.3 Insertion sort
1.2.4 Two-way Merge sort
1.2.5 Quick sort
1.2.6 Time Complexity and Efficiency of sorting algorithms.
1.3 Recursion:
1.3.1 Problem solving using recursion
1.3.2 Run time stack in recursion

Unit – II **10Hrs**

2.1 Stacks:
2.1.1 Introduction to Stacks
2.1.2 Basic stack operations
2.1.3 Stack-array implementation
2.1.4 Stack applications
2.2 Queues:
2.2.1 Introduction to Queues
2.2.2 Queue operations
2.2.3 Array implementation of queues
2.2.4 Circular Queue implementation
2.2.5 Priority Queues

Unit – III **10 Hrs**

3.1 Linear lists:
3.1.1 Linear list concepts
3.1.2 Types of Linked lists
3.1.2.1 Single linked list
3.1.2.2 Double linked list
3.1.2.3 Circular linked list
3.1.3 Linked list operations
3.1.3.1 Creating
3.1.3.2 Inserting
3.1.3.3 Deleting
3.1.3.4 Traversing

Unit – IV **20Hrs**

4.1 Trees:

4.1.1 Basic tree concepts

4.1.2 Binary trees

4.1.3 Complete Binary trees

4.1.4 Binary tree traversals – in order, pre order and post order

4.1.5 Applications of trees

4.1.6 Changing general tree to binary tree.

4.1.7 Binary search tree

4.1.7.1 Creating

4.1.7.2 Insertion

4.1.7.3 Deletion

Unit – V **10 Hrs**

5.1 Graphs:

5.1.1 Graph concepts

5.1.2 Graph Traversing techniques (algorithms only)

5.1.3 Minimum Spanning Tree

5.1.5 Primes, Krushkal algorithms

Text Book:

Classic Data Structures, Debasis Samantha, 2E, PHI Publications.

Reference Book:

Data Structures – A pseudocode approach with C, Richard F. Gilberg, Behrouz A. Forouzan, 2003, Thomson Learning Publications.

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COMPUTER SCIENCE	**CSH P21**	**2017-18** **2018-19**	**B.Sc.(Honors)**

SEMESTER – II **Credits: 2**

DATA STRUCTURES LAB **30Hrs**

1. Write Programs to implement the Stack operations using an array.
2. Write Programs to implement the Queue operations using an array.
3. Write Programs to implement the Stack operations using Pointers.
4. Write Programs to implement the Queue operations using Pointers.
5. Write a program for arithmetic expression evaluation.
6. Write a program for Binary search Tree Traversals
7. Write a program to implement dequeue using a doubly linked list.
8. Write a program to search an item in a given list using
9. Linear Search
10. Binary Search.
11. Write a program for

a. (i)Bubble Sort

b. (ii) Quick Sort

12. Merge Sort.
13. Write a program for polynomial addition using SLL

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COMPUTER SCIENCE	CSH T22	2017-18	B.Sc.(Honors)

SEMESTER – II **Credits: 4**

PYTHON

UNIT-1: **12 Hrs**

Introduction: History, Features, Setting up path, working with Python, Basic Syntax, Variable and Data Types, Operators.

Conditional Statements: If, If- else, Nested if-else

Looping: for, while, nested loops, break, continue.

UNIT-2: **12 Hrs**

Strings: string Manipulation, Accessing Strings, Basic Operations, String slices, Function and Methods.

Lists: Introduction, Accessing list, Operations, Working with lists Function and Methods.

Tuple: Introduction Accessing tuples, Operations, Working with Functions and Methods.

UNIT-3 **12Hrs**

Dictionaries: Introduction, Accessing values in dictionaries, working with dictionaries, Properties

Functions: Defining a function, calling a function, Types of functions, Function Arguments, Anonymous functions, Global and local variables.

Modules: Importing module, Math module, Random module, Packages, Composition.

UNIT-4: **12 Hrs**

Input-Output: Printing on screen, Reading data from keyboard, Opening and closing file, Reading and writing files, Functions

Exception Handling: Exception, Exception Handling, Except clause, Try? finally clause , User Defined Exceptions .

UNIT-5: **12 Hrs**

OOPs concept:

Classes, Objects, Attributes and methods,Design with classes, Data modelling,Persistent storage of objects,Inheritance,Polymorphism, Overloading, Overriding,Data hiding,Abstract Class.

Text Books:

1. Think Python by Allen Downey,Green Tea Press.
2. Learning Python 5th Edision by mark Lutz , published by O'relly media.
3. Learning with Python by Jeffrey Elkner,Chris Meyers,Allen Downey ,Dream Tech Press

4. Introduction to Computation and programming with Python by John V.Guttag,PHI

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COMPUTER SCIENCE	CSH P22	2017-18	B.Sc.(Honors)

SEMESTER – II **Credits: 2**

PYTHON LAB

30Hrs

1. Python Program to Print Hello world!
2. Python Program to Add Two Numbers
3. Python Program to Find the Square Root
4. Python Program to Calculate the Area of a Triangle
5. Python Program to Solve Quadratic Equation
6. Python Program to Swap Two Variables
7. Python Program to Generate a Random Number
8. Python program to check if a number is positive, negative or zero
9. Python Program to Check if a Number is Odd or Even
10. Python Program to Check Leap Year
11. Python Program to Find the Largest Among Three Numbers
12. Python Program to Check Prime Number
13. Python Program to Print all Prime Numbers in an Interval
14. Python Program to Find the Factorial of a Number
15. Python Program to Display the multiplication Table
16. Python Program to Print the Fibonacci sequence
17. Python Program to Check Armstrong Number
18. Python Program to Find Armstrong Number in an Interval
19. Python Program to Find the Sum of Natural Numbers
20. Python Program to Convert Decimal to Binary, Octal and Hexadecimal
21. Python Program to Find ASCII Value of Character
22. Python Program to Find LCM
23. Python Program to Find Factors of Number
24. Python Program to Make a Simple Calculator
25. Python Program to Find Sum of Natural Numbers Using Recursion
26. Python Program to Find Factorial of Number Using Recursion
27. Python Program to Add Two Matrices
28. Python Program to Transpose a Matrix
29. Python Program to Multiply Two Matrices
30. Python Program to Check Whether a String is Palindrome or Not

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COMPUTER SCIENCE	**CSH T31**	**2017-18** **2018-19**	**B.Sc. (Hons)**

SEMESTER – III **Credits: 4**

OBJECT ORIENTED PROGRAMMING USING JAVA

Unit-1 **10 hrs**

1.1 FUNDAMENTALS OF OBJECT – ORIENTED PROGRAMMING

1.1.1 Introduction
1.1.2 Object Oriented paradigm
1.1.3 Basic Concepts of OOP
1.1.4 Benefits of OOP
1.1.5 Applications of OOP
1.1.6 Java features

1.2 OVERVIEW OF JAVA LANGUAGE

1.2.1 Introduction
1.2.2 Simple Java program structure
1.2.3 Java tokens
1.2.4 Java Statements
1.2.5 Implementing a Java Program
1.2.6 Java Virtual Machine
1.2.7 Command line arguments

1.3 CONSTANTS, VARIABLES & DATATYPES

1.3.1 Introduction
1.3.2 Constants
1.3.3 Variables
1.3.4 Data Types
1.3.5 Declaration of Variables
1.3.6 Giving Value to Variables
1.3.7 Scope of variables
1.3.8 Symbolic Constants
1.3.9 Type casting
1.3.10 Getting Value of Variables
1.3.11 Standard Default values

1.4 OPERATORS & EXPRESSIONS.

Unit-II **13 hrs**

2.1 DECISION MAKING & BRANCHING

2.1.1 Introduction
2.1.2 Decision making with if statement
2.1.3 Simple if statement
2.1.4 If - Else statement
2.1.5 Nesting of if- else statements
2.1.6 The else if ladder
2.1.7 The switch statement
2.1.8 The conditional operator.

2.2 LOOPING

2.2.1 Introduction
2.2.2 The While statement
2.2.3 The do-while statement,
2.2.4 The for statement
2.2.5 Jumps in loops.

2.3 CLASSES, OBJECTS & METHODS

2.3.1 Introduction
2.3.2 Defining a class
2.3.3 Adding variables
2.3.4 Adding methods
2.3.5 Creating objects
2.3.6 Accessing class members
2.3.7 Constructors
2.3.8 Method overloading
2.3.9 Static members
2.3.10 Nesting of methods

Unit-III **12 hrs**

3.1 INHERITANCE

3.1.1 Extending a class
3.1.2 Overloading methods
3.1.3 Final variables and methods
3.1.4 Final classes
3.1.5 Abstract methods and classes

3.2 ARRAYS, STRINGS

3.2.1 Arrays
3.2.2 One-dimensional arrays
3.2.3 Creating an array
3.2.4 Two – dimensional arrays
3.2.5 Strings
3.2.6 Wrapper classes

3.3 INTERFACES

3.3.1 MULTIPLE INHERITANCE : Introduction
3.3.2 Defining interfaces
3.3.3 Extending interfaces
3.3.4 Implementing interfaces
3.3.5 Assessing interface variables

Unit-IV **11hrs**

4.1 MULTITHREADED PROGRAMMING

4.1.1 Introduction
4.1.2 Creating Threads
4.1.3 Extending the Threads
4.1.4 Stopping and Blocking a Thread
4.1.5 Lifecycle of a Thread
4.1.6 Using Thread Methods
4.1.7 Thread Exceptions
4.1.8 Thread Priority

4.1.9 Synchronization
4.1.10 Implementing the 'Runnable' Interface.

4.2 MANAGING ERRORS AND EXCEPTIONS

4.2.1 Types of errors
4.2.2 Compile-time errors
4.2.3 Run-time errors
4.2.4 Exceptions
4.2.5 Exception handling
4.2.6 Multiple Catch Statements
4.2.7 Using finally statement

Unit-V **14 hrs**

5.1 APPLET PROGRAMMING

5.1.1 Local and remote applets
5.1.2 Applets and Applications
5.1.3 Building Applet code
5.1.4 Applet Life cycle: Initialization state, Running state, Idle or stopped state, Dead state, Display state.

5.2 PACKAGES

5.2.1 Introduction
5.2.2 Java API Packages
5.2.3 Creating Packages
5.2.4 Accessing a Package
5.2.5 Using a Package.

5.3 MANAGING INPUT/OUTPUT FILES IN JAVA

5.3.1 Introduction
5.3.2 Concept of Streams
5.3.3 Stream classes
5.3.4 Byte Stream Classes
5.3.5 Character Stream classes: Reader stream classes, Writer Stream classes
5.3.6 Reading and writing files.

Text Books:

1. E.Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGraw-Hill Company.

Reference Books:

1. Programming in Java by Sachin Malhotra, OXFORD University Press
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)

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA 10

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam, A.P.)

COMPUTER SCIENCE	**CSH P31**	**2017-18** **2018-19**	**B.Sc. (Hons)**

SEMESTER – III **Credits: 2**

OBJECT ORIENTED PROGRAMMINING USING JAVA LAB

30Hrs

1. Java program to demonstrate the use of Harmonic Series.
2. Java program to display a number of even, odd and sum of even, odd program.
3. Java program to find a sub string in the given string.
4. Java program to arrange the given strings in Alphabetic Order.
5. Java program to implements Addition and multiplication of two Matrices.
6. Java program to demonstrate the use of Constructor.
7. Java program to display a use of method overloading.
8. Java program to demonstrate the use of overriding Method.
9. Java program for single Inheritance.
10. Java program for implementing Interface.
11. Java program on Multiple Inheritance.
12. Java program for to implement Thread, Thread Priority,
13. Java program to demonstrate Exception handling.
14. Java program to demonstrate Applet program.

Text Books:

1. E.Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGraw-Hill Company.

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COMPUTER SCIENCE	**CSH T32**	**2017-18** **2018-19**	**B.Sc. (Honors)**

SEMESTER – III **Credits: 4**

DATABASE MANAGEMENT SYSTEMS

Unit-1 **12 hrs**

1.1 Database Systems
1.1.1 Introducing the database and DBMS
1.1.2 Files and File Systems
1.1.3 Problems with File System
1.1.4 Advantages of Database Management systems.
1.2 Data Models
1.2.1 The importance of Data models
1.2.2 Data Model Basic Building Blocks
1.2.3 Business Rules
1.2.4 The evaluation of Data Models
1.2.5 Degree of Data Abstraction.

Unit-II **12 hrs**
2.1 The Relational Database Model
2.1.1 A logical view of Data
2.1.2 Keys
2.1.3 Integrity Rules
2.1.4 Relational Set Operators
2.1.5 The Data Dictionary and the system catalog
2.1.6 Relationships with in the Relational Database
2.1.7 Data Redundancy revisited
2.1.8 Indexes
2.1.9 Codd's relational database rules.
2.2 Entity Relationship Model
2.2.1 The ER Model
2.2.2 Developing ER Diagram

Unit-III: Normalization of database tables **10 hrs**
3.1 Database Tables and Normalization
3.2 The need for Normalization
3.3 The Normal forms
3.4 denormalization.

Unit-IV **14 hrs**
4.1 Introduction to SQL:
4.1.1 Data Definition Commands
4.1.2 Data Manipulation Commands

4.1.3 Select queries

4.1.4 Advanced Data Definition Commands
4.1.5 Advanced Select queries
4.1.6 Virtual Tables
4.1.7 Joining Database Tables.

4.2 Advanced SQL:

4.2.1 Relational Set Operators
4.2.2 SQL Join Operators
4.2.3 Subqueries and correlated queries
4.2.4 SQL Functions
4.2.5 Oracle Sequences and Procedural SQL.

Unit-V: Transaction Management and Concurrency Control **12 hrs**

5.1 What is transaction?
5.2 Concurrency control
5.3 Concurrency control with locking Methods
5.4 Concurrency control with time stamping methods
5.5 concurrency control with optimistic methods
5.6 database recovery management.

Text Book:

1. Peter Rob, Carlos Coronel, Database Systems Design, Implementation and Management, Seventh Edition, Thomson (2007).

Reference Books:

1. Elimasri / Navathe, Fundamentals of Database Systems, Fifth Edition, Pearson Addison Wesley (2007).
2. Raman A Mata – Toledo/Panline K Cushman, Database Management Systems, Schaum's Outlibe series, Tata McGraw Hill (2007).
3. C.J.Date, A.Kannan, S.Swamynathan, An Introduction to Database Systems, Eight Edition, Pearson Education (2006).
4. Atul Kahate, Introduction to Database Management Systems, Pearson Education (2006).

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COMPUTER SCIENCE	**CSH P32**	**2017-18** **2018-19**	**B.Sc. (Hons)**

SEMESTER – III **Credits: 2**

DATABASE MANAGEMENT SYSTEMS LAB

30Hrs

1.Order Tracking Database

The Order Tracking Database consists of the following defined six relation schemas.
Employees(eno,ename,zip,hdate)
Parts(pno,pname,qoh,price,level) (hint: qoh: quality on hand)
Customers(cno,cname,street,zip,phone)
Orders(ono,cno,eno,received date,shipped date)
Odetails(ono,pno,qty)
Zipcodes(zip,city)

1. Solve the following queries

1. Get all pairs of customer numbers for customers based on same zip code.
2. Get part numbers for parts that have been ordered by at least two different customers.
3. For each odetail row, get ono,pno,pname,qty and price values along with the total price for the item. (total price=price*qty)
4. Get customer name and employee pairs such that the customer with name has placed an order through the employee
5. Get customer names living in Fort Dodge or liberal.
6. Get cname values of customers who have ordered a product with pno 10506.
7. Get pname values of parts with the lowest price.
8. Get cname values of customers who have placed at least one order through the employee with number 1000.
9. Get the cities in which customers or employees are located.
10. Get the total sales in dollars on all orders.
11. Get part name values that cost more than the average cost of all parts.
12. Get part names of parts ordered by at least two different Customers.
13. Get for each part get pno,pname and total sales
14. For each part, get pno,pname, total sales, whose total sales exceeds 1000
15. Get pno, part names of parts ordered by at least two different customers.
16. Get cname values of customers who have ordered parts from any one employee based in wichita or liberal.

2. Shipment database

An enterprise wishes to maintain the details about his suppliers and other corresponding details. For that it uses the following tables
Table s(sid,sname,address)
primary key : sid
Table p(pid,pname,color)
primary key : pid
Table cat(sid,pid,cost)

primary key : sid+pid
reference key : sid references s.sid
pid references p.pid
Solve the following queries
1. Find the pnames of parts for which there is some supplier
2. Find the snames of suppliers who supply every part.
3. Find the snames of suppliers who suppy every red part.
4. Find the pnames of parts supllied by london supplier and by no one else
5. Find the sids of suppliers who charge more for some part other than the average cost of that part
6. Using group by with having clause get the part numbers for all the parts supplied by more than one supplier.
7. Get the names of the suppliers, who do not supply part p2.
8. Find the sids of suppliers who supply a red and a green part
9. Find the sids of suppliers who supply a red or a green part
10.find the total amount has to pay for that supplier by part located from london

3.Employee database

An enterprise wishes to maintain a database to automate its operations. Enterprise divided into to certain departments and each department consists of employees. The following two tables describes the automation schemas

Dept (deptno, dname, loc)
Emp (empno,ename,job,mgr,hiredate,sal,comm,deptno)

1. Create a view, which contain employee names and their manager names working in sales department.
2. Determine the names of employee, who earn more than their managers.
3. Determine the names of employees, who take highest salary in their departments.
4. Determine the employees, who located at the same place.
5. Determine the employees, whose total salary is like the minimum salary
6. of any department.
7. Update the employee salary by 25%, whose experience is greater than 10 years.
8. Delete the employees, who completed 32 years of service.
9. Determine the minimum salary of an employee and his details, who join on the same date.
10. Determine the count of employees, who are taking commission and not taking Commission.
11. Determine the department does not contain any employees.
12. Find out the details of top 5 earner of company.
13. Display those managers name whose salary is more than average salary of his employees.
1. Display those employees who joined the company before 15th of the month?
2. Display the manager who is having maximum number of employees working under him?
3. Print a list of employees displaying ‘less salary’ if less than 1500 if exactly 1500 display as ‘exact salary’ and if greater than 1500 display ‘more salary’?
4. Display those employees whose first 2 characters from hire date-last 2 characters of salary?
5. Display those employees whose 10% of salary is equal to the year of joining?
6. In which year did most people join the company? Display the year and number of employees.
7. Display the half of the enames in upper case and remaining lower case
8. Display ename, dname even if there no employees working in a particular department(use outer join).

4. Pl/sql programs

1. Write a pl/sql program to check the given number is strong or not.

2. Write a pl/sql program to check the given string is palindrome or not.

3. Write a pl/sql program to swap two numbers without using third variable.

4. Write a pl/sql program to generate multiplication tables for 2,4,6

5. Write a pl/sql program to display sum of even numbers and sum of odd numbers in the given range.

6. Write a pl/sql program to check the given number is pollinndrome or not.

7. write a pl/sql procedure to prepare an electricity bill by using following table

table used: elect

name	**null? Type**
mno	not null number(3)
cname	varchar2(20)
cur_read	number(5)
prev_read	number(5)
no_units	number(5)
amount	number(8,2)
ser_tax	number(8,2)
net_amt	number(9,2)

8. Write a procedure to update the salary of employee, who belongs to certain department with a certain percentage of raise.

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COMPUTER SCIENCE	CSH T41	2017-18	B.Sc. (Hons)

SEMESTER – IV **Credits : 4**
COMPUTER NETWORKS
Unit – I **12 Hrs**

Introduction to Networking
1.1 Uses of computer networks
1.2 Types of computer networks
1.3 ISO OSI reference model
1.4 Multiplexing
1.4.1 Frequency Division Multiplexing
1.4.2 Wave Length Division Multiplexing
1.4.3 Time Division Multiplexing
1.5 Guided media
1.5.1 Twisted pair cable
1.5.2 Coaxial cable
1.5.1 Fiber optics
1.6 Unguided media
1.6.1 Radio waves
1.6.2 Micro waves
1.6.3 Satellites
1.7 Switching
1.7.1 Circuit switching
1.7.2 Packet switching
1.7.3 Message switching

Unit – II **12 Hrs**
Data Link Layer
2.1 Design issues of data link layer
2.2 Data link protocols
2.2.1 unrestricted simplex protocol
2.2.2 simplex stop and wait protocol
2.2.3 one bit sliding window protocol
2.3 Bluetooth
2.4 Error detection and correction

Unit – III **12 Hrs**
Network Layer
3.1 Introduction
3.2 Design issues of network layer
3.3 Virtual vs Datagram routing algorithms
3.4 Shortest path routing algorithm
3.5 Flooding
3.6 Distance vector routing algorithm
` 3.7 Congestion control algorithms

Unit – IV **12 Hrs**
Transport Layer

4.1 Introduction
4.2 Design issues of Transport Layer
4.3 Elements of Transport Protocols

4.3.1 Addressing
4.3.2 Connection Establishment
4.3.3 Connection Release
4.3.4 Flow control and Buffering
4.3.5 Multiplexing
4.3.6 Crash Recovery

4.4 Remote Procedure Call
4.5 User Datagram Protocol
4.6 Transmission Control Protocol

UNIT - V **12 hrs**
Application Layer

5.1 Domain Name system
5.2 Email architecture and services
5.3 User agent sending and receiving Email
5.4 WWW Architectural Overview
5.5 Client side Server side URL
5.6 Cookies
5.7 Cryptography

Text book :
1. Computer Networks-Andrew.S.Tanenbaum ,Pearson Edu Asia Fourth edision.
2. Introduction to Data Communications and Networking-Behrouz Forouzan,Tata McGraw Hill Edition

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COMPUTER SCIENCE	CSH P41	2017-18	B.Sc. (Hons)

SEMESTER – IV **Credits : 2**

COMPUTER NETWORKS LAB **30Hrs**

1. Implementation of Stop and Wait Protocol
2. Implementation of Sliding Window Protocol
3. Study of Socket Programming and Client – Server model
4. Write a code simulating ARP /RARP protocols.
5. Write a code simulating PING and TRACEROUTE commands
6. create a socket for HTTP for web page upload and download.
7. Write a program to implement RPC (Remote Procedure Call).
8. Implementation of Subnetting.
9. Applications using TCP and UDP Sockets like DNS, SNMP and File Transfer
10. Applications using TCP Sockets like

A) Echo client and echo server B) Chat C) File Transfer

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COMPUTER SCIENCE	**CSH T42**	**2017-18** **2018-19**	**B.Sc. (Honors)**

SEMESTER – IV **Credits: 4**

ADVANCED JAVA

Unit – I: **9 Hrs**

1.1 Networking

1.1.1 Networking Basics

1.1.1.1 Socket Overview
1.1.1.2 Client/Server
1.1.1.3 Reserved Sockets
1.1.1.4 Proxy Servers
1.1.1.5 Internet Addressing

1.1.2 URL

1.1.3 TCP/IP Client Sockets

1.1.4 TCP/IP Server Sockets

1.2 RMI

1.2.1 RMI Introduction

1.2.2 Simple Client Server Application Using RMI

Unit – II: **11 Hrs**

Introducing Swings

1.1.1 The origins of Swing
1.1.2 Swing is built on AWT
1.1.3 Two key swing features
1.1.4 The MVC Connection
1.1.5 Components and Containers
1.1.6 The swing packages
1.1.7 Event Handling.

1.2 Exploring Swing

1.2.1 JLabel and ImageIcon
1.2.2 JTextField
1.2.3 The Swing Buttons
1.2.4 JTabbedPane
1.2.5 JList
1.2.6 JComboBox
1.2.7 Trees
1.2.8 JTable.

Unit – III: Database Access **12 Hrs**

Introduction

3.1 Database programming using JDBC
3.2 How Jdbc works
3.3 Jdbc Architecture
3.4 Jdbc driver types
3.5 Studying javax.sql.* package – programs.

Unit – IV: Servlets **13 Hrs**

The life cycle of a servlet

4.1 Using Tomcat
4.2 A simple servlet
4.3 The Servlet API
4.4 The javax.servlet package
4.5 Reading Servlet Parameters
4.6 The javax.servlet.http package
4.7 Handling HTTP requests and responses
4.8 Using Cookies
4.9 Session Tracking.

Unit – V: Introduction to JSP **15 Hrs**

5.1 Introduction
5.2 Advantages of JSP
5.3 The problem with servlet
5.4 The anatomy of JSP page
5.5 JSP processing
5.6 JSP application design with MVC
5.7 Setting up the JSP Environment
5.8 Tomcat server
5.9 Testing Tomcat
5.10 Accessing database from JSP page.

Text Books:

1. Java Complete Reference by Herbert Schildt, 8th Edition, Oracle Press.
2. Advanced Java and Web Technologies by A.A. Puntambekar, First Edition, Technical Publications, 2013.

References Books:

1. JDBC, Servlet and JSP Black Book by Santosh kumar k and Kogent Solutions Inc, Reprint 2012.

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COMPUTER SCIENCE	**CSH P42**	**2017-18** **2018-19**	**B.Sc. (Hons)**

SEMESTER – IV **Credits: 2**

ADVANCED JAVA LAB

30Hrs

1. Write a program to establish connection between server and client.
2. Write a program to demonstrate the concept of RMI.
3. Write a program to create user login form using JApplet with following fields
   a. Username
   b. Password
   c. Submit Button
   d. Register Button
4. Write a program to create student registration form using JFrame with the following fields
   a. Roll Number
   b. Name of the Student
   c. User Name
   d. Password
   e. Confirm Password
   f. Gender
   g. Date of Birth.
   h. Father Name
   i. Mother Name
   j. Permanent Address
   k. Communication Address
   l. Father Phone Number
   m. X class Percentage
   n. Intermediate Percentage
   o. Degree Percentage
5. Write a program to insert student registration data in database table using jdbc from student registration form.
6. Write a program to authenticate a user in login form by taking username and password using jdbc.
7. Develop a Servlet Web Application which display welcome message to the user.
8. Develop a Servlet Web Application to register a new user using html and a servlet with atleast 15 fields.
9. Develop a Servlet Web Application to authenticate a user using html and a servlet for the following
   a. If the user is a valid user then welcome the user by displaying the username.
   b. If the user is an invalid user then display the login form with error message like “Invalid Username or Password”.
10. Develop a Servlet Web Application to display number of visitors for a website using cookie.
11. Develop a Servlet Web Application to create a session object for authenticating a user.
12. Develop a JSP Web Application with the following modules
    a. Login Page
    b. User Registration

c. Change Password
d. Forgot Password
e. Sign Out

Text Books:

Java Complete Reference by Herbert Schildt, 8th Edition, Oracle Press.Advanced Java and Web Technologies by A.A. Puntambekar, First Edition, Technical Publications, 2013.

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COMPUTER SCIENCE	**SEC 006**	**2017-18** **2018-19**	**B. Sc (Honors)**

SEMESTER – V **Credits: 2**

Mobile Application Development(Skill Enhancement Course)

Theory + Lab Component)

UNIT-1

Instruction of android: **6 Hrs**

1) What is android
2) Android versions android features
3) Android architecture
4) Android devices in the market
5) Android developers community obtaining the required tools
6) Android SDK
7) Installing android SDK tools.

UNIT-2 **6 Hrs**

Components, manifests and resources:

1) The activity component
2) Activity Life cycle
3) Service component
4) The application component
5) Debugging android applications
6) The manifest element

UNIT-3 **6 Hrs**

Components of a screen:

1) Views and view groups
2) linear layout
3) absolute layout
4) table layout
5) relative layout
6) frame layout
7) scroll view

UNIT-4 **6 Hrs**

Utilizing action bar:

1) Adding action items to the action bar
2) customizing the action items and application icon
3) What is fragment
4) life cycle of fragments

UNIT-5 **6 Hrs**

Using basic views:

1) TextView

2) Button
3) image view
4) image button
5) edit text
6) checkbox
7) radio button
8) radio group
9) Toggle Button
10) auto complete text view
11) list view, grid view, and spinner view

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COMPUTER SCIENCE	**SEC 006**	**2017-18** **2018-19**	**B. Sc (Honors)**

SEMESTER – V **Credits: 2**

Mobile Application Development(Skill Enhancement Course)

30Hrs

1) Create an “hello world” text in android application
2) Create an application to demonstrate
a) TextView,
b) EditText,
c) Button.
3) Create an application to demonstrate
a) spinner
b) Progress bar
c) Webview
4) Create an application to demonstrate
a) ListView
b) GridView
5) Create an application to demonstrate Radio buttons and Checkbox.
6) Create an application to demonstrate ImageView and ImageButton.
7) Create an application that will change color of the screen, based on selected options from the menu
8) Create an application to demonstrate toast message the entered data
9) Create a program with andriod custom toast
10)Print a table for given number android application

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COMPUTER SCIENCE	**CSH T52**	**2017-18** **2018-19**	**B.Sc. (Hons)**

SEMESTER – V **Credits: 4**

WEB DESIGNING (HTML, CSS, JAVA SCRIPT, XML)

UNIT I – INTRODUCTION **10 Hrs**

1.1 Internet Principles
1.2 Basic Web Concepts
1.3 Client / Server Model
1.4 How Web Works
1.5 HTML and Scripting Languages
1.6 Standard Generalized Mark Up Languages.
1.7 Next Generation
1.8 Internet
1.9 Protocols and Application

UNIT II – HTML **10 Hrs**

2.1 Introduction
2.2 Working on HTML
2.3 HTML Elements
2.4 HTML Headings & Comments
2.5 Font Styles
2.6 Hyperlink & Image & List Elements
2.7 Tables
2.8 Form & Form Controls
2.9 HTML5 Form Validation
2.10 HTML5 Canvas
2.11 HTML5 Media Elements

UNIT III –Cascading Style Sheet-CSS **10 Hrs**

Introduction to CSS

3.1 CSS Syntax
3.2 CSS Selectors
3.3 Formatting Text
3.4 Colors and Backgrounds
3.5 Margins & Padding & Borders
3.6 CSS Links & Comments and List Styles
3.7 Floating and Positions
3.8 Pagination & Animation & Navigations
3.9 Image Gallery Styles

UNIT IV – JAVA SCRIPT & JQUERY **15 Hrs**

4.1 Java Script

4.1.1 Introduction to Java Script
4.1.2 How Declare Variables and Data Types

4.1.3 Operators and Comments
4.1.4 Conditional Statements
4.1.5 Functions
4.1.6 Events
4.1.7 Java Script Form Validations and Expressions
4.1.8 Exception Handling
4.1.9 Animations
4.1.10 Handling Windows

4.2 JQuery

4.2.1 Introduction JQuery
4.2.2 JQuery Selecting Elements
4.2.3 JQuery Events
4.2.4 JQuery Styling and Animating
4.2.5 DOM Manipulation

UNIT V- XML **15 Hrs**

5.1 Introduction to XML
5.2 Document Type Definitions
5.3 Style Languages
5.4 Introduction Schemas
5.5 Data Types & Restrictions
5.6 XSL & Advanced XSL
5.7 XPath and Advance XPath and XPointer

References Books:

- Gopalan N.P and Akilandeswari J., **"Web Technology",** Prentice Hall of India 2011.
- Jennifer Niediest Robbins **, "Learning Web Design ",** 4th Edition 2014
- Jonathan Chaffer , Karl Swedberg **, "Learning JQuery",** 4th Edition 2013
- Erik Ray, O'Reilly Media, "**Learning XML**", 2009 -2014 Edition 2009

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COMPUTER SCIENCE	**CSH P52**	**2017-18** **2018-19**	**B.Sc (Honors)**

SEMESTER – V **Credits: 2**

WEB DESIGNING LAB **30Hrs**

1) Write the HTML code at least with 30 lines which make use of following tags: The Italics tag, center tag, paragraph tag, Break tag, font tag and its attributes.

2) Create the HTML file name Assignment.htm with the given text and below specification:

Welcome to ABC Institution

ABC was founded in 1988 to offer distance learning programs. The privately owned independent college once named, "American Institute for Computer Sciences," changed its name to better reflect what students can accomplish with distance education. A typical student at ABC is 26 to 40 years old and many of them work in a tech-related field. All of them want to better themselves by getting the college degree they need to progress up the career ladder.

a) Specify the title/Header 'Welcome to ABC Institute' at the top of file.
b) Centre the above title and change font size to ARIAL, 14.
c) Give three lines spacing after the title.
d) Apply BOLD, UNDERLINE and ITALIC effect to it.
e) Select appropriate BACKGROUND and BGCOLOR attributes.
f) Use text formatting command using paragraph break and line breaks.
g) Emphasize document context using Align, Size and Width tags.

3) Design of the cart page and the registration page required for online book store. Write an XML file which will display the Book information. It includes the following:

1) Title of the book
2) Author Name
3) ISBN number
4) Publisher name
5) Edition
6) Price

4) Looking at the screen given below write the HTML code making use of following tags.

Text Content

Example on Unordered list

- Sports Car
- Business Car
- Economy Car

Example on Ordered list

1. Sports Car
2. Business Car
3. Economy Car

Example on Definition list

- Sports Car
  - Ferrari
- Business Car
  - Tata Sumo
- Economy Car
  - Maruti

5) Design a web page using the image files ‘XYZ.GIF’, ‘PQR.GIF’ and ‘DEF.GIF’ according to the following specifications. (Use an appropriate Text content).

- ♦ Use a Border for ‘XYZ.GIF’.
- ♦ Resize the width and Height ‘PQR.GIF’ and ‘DEF.GIF’ to 100 pixels each.
- ♦ Align the text with respect to the images so as to obtain the desired output.

6) Create a web page giving the following Flight details in a tabular format.

- ♦ Flight Name
- ♦ Starting Place
- ♦ Destination Place
- ♦ Arrival and departure time
- ♦ Class
- ♦ Fare

a) Place a border for the table and use all padding to present the cell data with clarity.
b) Align the table in the center of the screen. Use a caption saying ‘Schedule for flights’.
c) Change font style, color, and size of title ‘Schedule for flights’ to ARIAL ’15 & line spacing 2.5 to the table data.
d) Use the appropriate background color for data of table.
e) Save the file with ‘FLIGHT.HTM’

7. Create a specimen of a corporate web page. Divide the browser screen into two frames. The frame on the left will be a menu consisting of hyperlinks. Clicking on any one of these links will lead to a new page, which must open in the target frame, which is on the right hand side.
8. Create two links the first link that will open a page that displays the company profile, its business and its products. The second link will display the contact address of the company.
9. Write JavaScript to validate the following fields of the above registration page.

1. Name (Name should contains alphabets and the length should not be less than 6 characters).
2. Password (Password should not be less than 6 characters length).
3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)
4. Phone number (Phone number should contain 10 digits only).

10. Use user defined function to get array of values and sort them in ascending order using JavaScript.
11.Web page Calendar Creation : Display all month
12. Design a web page using CSS (Cascading Style Sheets) which includes the following:
1) Use different font, styles: In the style definition you define how each selector should work .Then, in the body of your pages, you refer to these selectors to activate the styles.
2) Set a background image for both the page and single elements on the page.
3) Control the repetition of the image with the background-repeat property
13. Write a program in html to create a web page to show registration in naukri.com.
14. Design a webpage of any educational website.
15. Create any governmental webpage.

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COMPUTER SCIENCE	CSH T51	2017-18 2018-19	B.Sc (Honors)

SEMESTER – V **Credits: 4**

OPERATING SYSTEMS

Unit - 1: **10Hrs**

Operating System

1.1 Introduction
1.2 What Operating Systems do
1.3 Computer system organization
1.4 Computer system architecture
1.5 Operating system structure
1.6 Storage Management

System Structure

1.7 Operating system services
1.8 User operating system interface
1.9 System Programs

Unit – 2: **13Hrs**

Process Management

2.1 Process Concepts
2.2 Process Scheduling
2.3 Inter process Communication

Multithreaded Programming

2.4 Overview
2.4.1 Motivation
2.4.2 Benefits
2.5 Multithreading models

Process Scheduling

2.6 Basic Concepts
2.7 Scheduling Criteria
2.8 Scheduling Algorithms

Unit – 3: **13Hrs**

Synchronization

3.1 Background
3.2 The critical section problem
3.3 Semaphores
3.3.1 Usage
3.3.2 Implementation
3.3.3 Deadlocks and Starvation
3.4 Classic problems of synchronization

Deadlocks

3.5 System Model
3.6 Deadlock Characterization
3.7 Deadlock Prevention

Unit- 4: **12Hrs**

Memory Management

4.1 Background
4.1.1 Basic hardware
4.1.2 Address Binding
4.2 Swapping
4.3 Contiguous memory allocation
4.4 Paging
4.4.1 Basic Method
4.4.2 Hardware Support
4.4.3 Protection
4.5 Segmentation

Virtual memory management

4.6 Background
4.7 Demand Paging
4.8 Page Replacement

Unit- 5: **12Hrs**

File System

5.1 File Concept
5.2 Access Methods
5.3 File Sharing

Implementing File Systems

5.4 File System Implementation
5.5 Allocation Methods

Secondary Storage Structure

5.6 Overview of mass storage structure
5.7 Disk scheduling

TEXT BOOKS

Operating system Concepts: Abraham Silberschatz, Peter B. Galvin, Greg Gagne, 8th Edition, wiley.

REFERENCE 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

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COMPUTER SCIENCE	**CSH P51**	**2017-18** **2018-19**	**B. Sc (Honors)**

SEMESTER – V **Credits: 2**

OPERATING SYSTEMS LAB **30Hrs**

1. Write c program to implement the Process system calls.
2. Write a 'c' program for I/O system calls.
3. Write the program to implement CPU & scheduling algorithm for first come first serve scheduling.
4. Write a program to implement cpu scheduling algorithm for shortest job first scheduling.
5. Write a 'C' program to perform priority scheduling.
6. Write a program to implement cpu scheduling for Round Robin Scheduling.
7. To implement first fit, best fit algorithm for memory management.

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COMPUTER SCIENCE	CSH T53	2017-18 2018-19	B. Sc (Honors)

SEMESTER – V **Credits: 4**

Total Hours: 60SOFTWARE ENGINEERING

UNIT–I: **15 Hrs**

1. Introduction

1.1 The Software Engineering
1.2 Evolution and impact
1.3 Software Development Projects
1.4 Software Process and Project Metrics
1.5 Emergence of Software Engineering
1.6 Computer Systems Engineering

2. Software Life cycle models

2.1 Need for life Cycle model
2.2 Classical waterfall model
2.3 Iterative waterfall model
2.4 V-model
2.5 Prototyping model
2.6 Evolutionary model
2.7 Spiral model
2.8 Comparison of different life cycle models.

UNIT–II: **10 Hrs**

3. Software Project Management

3.1 Responsibilities of a Software Project Manager
3.2 Project planning
3.3 Metrics for Project size estimation and scheduling.

4. Requirement Analysis

4.1 Requirements gathering and analysis
4.2 Software Requirements Specification
4.3 Contents of the SRS document
4.4 Functional requirements
4.5 Traceability
4.6 Characteristics of good SRS DOCUMENT
4.7 Organization of the SRS document.

UNIT-III: **13 Hrs**

5. Software Design

5.1 Desirable characteristics of a good software design
5.2 Cohesion and coupling, Layer Arrangement of Modules
5.3 Function-oriented design and Object-oriented design.

6. Function-oriented software Design

6.1 Overview of SA/SD methodology
6.2 Structured analysis
6.3 Data Flow Diagrams

6.4 Structured Design and Detailed Design.

UNIT-IV: **12 Hrs**

7. Unified Modeling Languag

7.1 Overview of Object-oriented concepts
7.2 Unified Modeling Language
7.3 UML diagrams
7.4 Use case model class diagrams
7.5 Interaction diagrams, Activity diagrams, state chart diagrams

8. User Interface Design

8.1 Characteristics of good user interface design
8.2 Basic concepts, Types of user interfaces
8.3 Component-based GUI development
8.4 A user interface Design Methodology

UNIT-V: **10 HXrs**

9. Coding and Testing

9.1 Coding standards & guidelines
9.2 Code review
9.3 Testing, unit testing, Black-box testing, White-box testing
9.4 Debugging
9.5 Integration testing, System testing.

10. Software Reliability and Quality Management

10.1 Software Reliability
10.2 Statistical Testing
10.3 Software Quality.

Text Book: Fundamentals of Software Engineering **-** By RAJABMALL –PHI Third Edition

REFERENCE BOOKS:

1. Roger Pressman S., "Software Engineering: A Practitioner's Approach", 7th Edition, McGraw Hill, 2010.
2. Sommerville, "Software Engineering", Eighth Edition, Pearson Education, 2007.

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COMPUTER SCIENCE	**CSH T62**	**2017-18** **2018-19**	**B. Sc (Honors)**

SEMESTER – VI **Credits: 4**

FOUNDATION OF DATA SCIENCE (R - LANGUAGE)

.

UNIT I - Introduction to Data Science **12 Hrs**

1.1 Data science process
1.1.1 Roles
1.1.2 Stages in data science project
1.2 Loading data into R
1.2.1 Working with data from files
1.2.2 Working with relational databases
1.3 Exploring data
1.3.1 Using summary statistics to spot problems
1.3.2 Spotting problems using graphics and visualization
1.4 Managing data
1.4.1 Cleaning
1.4.2 Sampling for modelling and Validation

UNIT II - Modelling Methods **12 Hrs**

2.1 Choosing and evaluating models
2.1.1 Mapping problems to machine learning
2.1.2. Evaluating clustering models
2.2 Validating models
2.2.1 Identifying Common Model Problems
2.2.2 Quantifying Model Soundness
2.3 Cluster analysis
2.3.1 Distances
2.3.2 Preparing the data
2.3.3 K – means Algorithm

UNIT III - Introduction to R Language **12 Hrs**

3.1 Reading and getting data into R
3.1.1 Viewing named objects
3.1.2 Types of data items and structure of data items
3.1.3 Working with history commands
3.1.4 Saving our working R
3.2 Working with objects
3.2.1 Manipulating objects
3.2.2 Viewing objects
3.2.3 Constructing objects

UNIT IV – Tables & Graphics **12 Hrs**

1.4 Summary tables
1.4.1 Making contingency tables

1.4.2 Selecting parts of a table object
1.4.3 Converting an object into a table
1.4.4 Testing for table objects
1.5 Manipulating data and extracting componenets
1.5.1 creating data for complex analysis
1.5.2 summarizing data
1.6 Introduction to graphical analysis
1.6.1 Box-Whisker Plots
1.6.2 Scatter plots
1.6.3 Pairs plots
1.6.4 Line charts
1.6.5 Pie charts
1.6.6 Bar charts

UNIT V - Delivering Results **12 Hrs**

5.1 Displaying multivariate data
5.2 Plot () function
5.3 Matrix plots
5.4 Multiple plots in one window
5.5 Exporting graph
5.6 Using graphics parameters

Prescribed Text books:

1. Nina Zumel, John Mount, "Practical Data Science with R", Manning Publications, 2014.(UNIT I,II)
2. Mark Gardener, "Beginning R - The Statistical Programming Language", John Wiley & Sons, Inc., 2012.(UNIT III,IV.V)

Reference Books:

1. Jure Leskovec, Anand Rajaraman, Jeffrey D.Ullman, "Mining of Massive Datasets", Cambridge University Press, 2014.
2. W. N. Venables, D. M. Smith and the R Core Team, "An Introduction to R", 2013.
3. Tony Ojeda, Sean Patrick Murphy, Benjamin Bengfort, Abhijit Dasgupta, "Practical Data Science Cookbook", Packt Publishing Ltd., 2014.
4. Nathan Yau, "Visualize This: The FlowingData Guide to Design, Visualization, and Statistics", Wiley, 2011.
5. Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.

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COMPUTER SCIENCE	CSH P62	**2017-18** **2018-19**	**B.Sc (Honors)**

SEMESTER – VI **Credits: 2**

FOUNDATION OF DATA SCIENCE LAB (R- Language Lab)

1. Create a vector in R and perform operations on it (arithmetic operations, combining vectors, retrieving elements of vector, assign names to vector elements).
2. Create integer, complex, logical, character data type objects in R and print their values and their class using print and class functions.
3. Create a matrix of values in R and extract data from matrix. (Ex. Second row third elements etc) find transpose of matrix and combine two matrices using Rbind and Cbind functions.
4. Create a list in R and perform operations on it like list slicing, sum and mean functions, head and tail functions and finally delete list using rm() function.
5. Create data frame in R and perform operations on it.
6. Import data into R from text and excel files using read.table () and read.csv () functions.
7. Print name of your current working directory and set working directory to your directory in R.
8. Write code in R to find out whether number is prime or not.
9. Print numbers from 1 to 100 using while loop and for loop in R.
10. Create a factor in R by specifying levels. And print it then modify some values in it.
11. Find factorial of a number using recursion in R.
12. Perform arithmetic operations in R using switch case.
13. Create a dataset and draw different types of graphs using plot, boxplot, histogram, stripchart, line functions.
14. Demonstrate Kmeans clustering for any dataset of your choice.
15. Demonstrate Timeseries for any dataset of your choice

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COMPUTER SCIENCE	CSH T61	2017-18 2018-19	B. Sc (Honors)

SEMESTER – VI **Credits: 4**

SOFTWARE TESTING

UNIT I **10Hrs**

1.1 Introduction to Software Testing

1.1.1 Introduction
1.1.2 Evolution of Software Testing
1.1.3 Software Testing Myths and Facts
1.1.4 Goals of Software Testing
1.1.5 Psychology for Software Testing
1.1.6 Software Testing Definitions
1.1.7 Model for Software Testing
1.1.8 Effective Software Testing vs Exhaustive Software Testing

1.2 Software Testing Terminology and Methodology

1.2.1 Software Testing Terminology
1.2.2 Software Testing Life Cycle (STLC)
1.2.3 Software Testing Methodology

UNTT II **13Hrs**

2.1 Verification and Validation

2.1.1 Verification and Validation Activities
2.1.2 Verification
2.1.3 Verification of Requirements
2.1.4 Verification of High level Design
2.1.5 Verification of Low level Design
2.1.6 How to verify Code?
2.1.7 Validation

2.2 Dynamic Testing: Black Box Testing Techniques

2.2.1 Boundary Value Analysis
2.2.2 Equivalence Class Testing
2.2.3 State Table based Testing
2.2.4 Decision Table based Testing

UNIT III **13Hrs**

3.1 Dynamic Testing: White Box Testing Techniques

3.1.1 Need of White box testing
3.1.2 Logic Coverage Criteria
3.1.3 Basis Path Testing
3.1.4 Loop Testing
3.1.5 Data Flow Testing
3.1.6 Mutation Testing

3.2 Static Testing

3.2.1 Inspections
3.2.2 Walkthroughs
3.2.3 Technical Reviews

UNIT IV **12Hrs**

4.1 Validation Activities

4.1.1 Unit Validation Testing
4.1.2 Integration Testing
4.1.2.1 Decomposition Based Integration
4.1.2.2 Path Based Integration
4.1.3 Function Testing
4.1.4 System Testing
4.1.5 Acceptance Testing

4.2 Regression Testing

4.2.1 Progressive vs Regression Testing
4.2.2 Regression testing produces quality software
4.2.3 Regression Testability
4.2.4 Objectives of Regression Testing
4.2.5 When to do regression testing?
4.2.6 Regression Testing Types
4.2.7 Defining Regression Test Problem
4.2.8 Regression Testing Techniques

UNIT V **12Hrs**

5.1 Efficient Test Suite Management

5.1.1 Why Test Suite grows?
5.1.2 Minimizing the test suite and its benefits
5.1.3 Test Suite Prioritization
5.1.4 Types of Test case Prioritization
5.1.5 Prioritization Techniques
5.1.6 Measuring Effectiveness of Prioritized Test Suite

5.2 Debugging

5.2.1 Debugging Process
5.2.2 Debugging is difficult
5.2.3 Debugging Techniques
5.2.4 Correcting the Bugs
5.2.5 Debuggers

Text Books

1. Software Testing, Principles and Practices, Naresh Chauhan , Oxford
2. Software Testing, Principles, techniques and Tools, M G Limaye, TMH
3. Software Testing, Principles and Practices, Desikan and Ramesh, Pearson Education

Reference Books

1. Software Testing, Yogesh Singh, CAMBRIDGE
2. Software Testing Techniques, Baris Beizer, International Thomson Computer Press, 2nd Edition

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COMPUTER SCIENCE	**CSH P61**	**2017-18** **2018-19**	**B. Sc (Honors)**

SEMESTER – VI **Credits: 2**

SOFTWARE TESTING LAB **30Hrs**

Problem Statement 01

Consider an automated banking application. The user can dial the bank from a personal computer, provide a six-digit password, and follow with a series of keyword commands that activate the banking function. The software for the application accepts data in the following form:
Area Code Blank or three-digit number
Prefix Three-digit number, not beginning with 0 or 1
Suffix Four-digit number
Password Six-character alphanumeric
Commands "Check status", "Deposit", "Withdrawal"
Design adhoc test cases to test the system

Problem Statement 02

Consider an automated banking application. The user can dial the bank from a personal computer, provide a six-digit password, and follow with a series of keyword commands that activate the banking function. The software for the application accepts data in the following form:
Area Code Blank or three-digit number
Prefix Three-digit number, not beginning with 0 or 1
Suffix Four-digit number
Password Six-character alphanumeric
Commands "Check status", "Deposit", "Withdrawal"
Design the test cases to test the system using following Black Box testing technique:
BVA, Worst BVA, Robust BVA, Robust Worst BVA
Equivalence class testing (Input/Output domain)

Problem Statement 03

Consider an application that is required to validate a number according to the following simple rules:
1. A number can start with an optional sign.
2. The optional sign can be followed by any number of digits.
3. The digits can be optionally followed by a decimal point, represented by a period.
4. If there is a decimal point, then there should be two digits after the decimal.
5. Any number-whether or not it has a decimal point, should be terminated a blank.
6. A number can start with an optional sign.
7. The optional sign can be followed by any number of digits.
8. The digits can be optionally followed by a decimal point, represented by a period.
9. If there is a decimal point, then there should be two digits after the decimal.
10. Any number-whether or not it has a decimal point, should be terminated a blank. Generate test cases to test valid
and invalid numbers.**(HINT)** Use Decision table and cause-effect graph to generate test cases.

Problem Statement 04

Generate test cases using Black box testing technique to Calculate Standard Deduction on Taxable Income. The standard deduction is higher for tax payers who are 65 or older or blind. Use the method given below to calculate tax.

1. The first factor that determines the standard deduction is the filing status. The basic standard deduction for the
various filing status are:

Single $4,750

Married, filing a joint return $9,500

Married, filing a separate return $7,000

2. If a married couple is filing separate returns and one spouse is not taking standard
Deduction, the other spouse also is not eligible for standard deduction.

3. An additional $1,000 is allowed as standard deduction, if either the filer is 65 yrs or the spouse is 65 yrs or older(the latter case applicable when the filing status is “Married” and filing “joint”).

4. An additional $1,000 is allowed as standard deduction, if either the filer is blind or the spouse is blind (the latter case applicable when the filing status is “married” and filing “joint”).

(HINT):

From the above description, it is clear that the calculation of standard deduction depends on the following 3 factors:

1. Status of filing of the filer
2. Age of the filer
3. Whether the filer is blind or not

In addition, in certain cases, the following additional factors also come into play in calculating the standard deduction.

1. Whether spouse has claimed standard deduction
2. Whether spouse is blind
3. Whether the spouse is more than 65 years old

Problem Statement 05

Consider the following program segment:

```
1. int max (int i, int j, int k)
2. {
3. int max;
4. if (i>j) then
5. if (i>k) then max=i;
6. else max=k;
7. else if (j > k) max=j
8. else max=k
9. return (max);
10. }
```

a) Draw the control flow graph for this program segment

b) Determine the cyclomatic complexity for this program

c) Determine the independent paths

Problem Statement 06

Source code of simple insertion sort implementation using array in ascending order in c programming language

```
#include<stdio.h>
int main(){
int i,j,s,temp,a[20];
Printf ("Enter total elements: "); Scanf ("%d",&s);
printf("Enter %d elements: ",s); for(i=0;i<s;i++) scanf("%d",&a[i]); for(i=1;i<s;i++){
```

```
temp=a[i]; j=i-1; while((temp<a[j])&&(j>=0)){ a[j+1]=a[j];
j=j-1;
}
a[j+1]=temp;
}
printf("After sorting: ");
for(i=0;i<s;i++)
printf(" %d",a[i]);
return 0;
}
```

HINT: for loop is represented as while loop

a) Draw the program graph for given program segment b) Determine the DD path graph

c) Determine the independent paths

d) Generate the test cases for each independent path

Problem Statement 07

Consider a system having an FSM for a stack having the following states and transitions:

States

Initial: Before creation

Empty: Number of elements = 0

Holding: Number of elements > 0, but less than the maximum capacity

Full: Number elements = maximum

Final: After destruction

Initial to Empty: Create

Empty to Holding, Empty to Full, Holding to Holding, Holding to Full: Add

Empty to Final, Full to Final, Holding to Final: Destroy

Holding to Empty, Full to Holding, Full to Empty: Delete

Design test cases for this FSM using state table-based testing.

Problem Statement 08

Given the following fragment of code, how many tests are required for 100% decision coverage? Give the test cases**.**

```
if width > length
then biggest_dimension = width if height > width
then biggest dimension = height end_if
else if biggest dimension = length then if height > length
then biggest_dimension = height end_if
end_if end_if
```

Hint 04 test cases

Problem Statement 09

Given the following code, how much minimum number of test cases is required for full statement and branch coverage?

```
read p read q
if p+q> 100
then print "Large" endif
if p > 50
then print "p Large" endif
```

Hint 1 test for statement coverage, 2 for branch coverage

Problem Statement 10

Consider a program to input two numbers and print them in ascending order given below. Find all du paths and identify those du-paths that are not feasible. Also find all dc paths and generate the test cases for all paths (dc paths

and non dc paths).

```
#include<stdio.h>
#include<conio.h>
1. void main ()
2. {
3 int a, b, t;
4. Clrscr ();
5. Printf (“Enter first number”);
6. scanf (“%d”,&a);
7. printf(“Enter second number”);
8. scanf(“%d”,&b);
9. if (a<b){
10. t=a;
11a=b;
12  b=t;
13}
14. printf (“%d %d”, a, b);
15 getch ();
}
```

Problem Statement 11

Consider the above program and generate possible program slices for all variables. Design at least one test case from every slice.

Problem Statement 12

Consider the code to arrange the nos. in ascending order. Generate the test cases for relational coverage, loop coverage and path testing. Check the adequacy of the test cases through mutation testing and also compute the mutation score
for each.

```
i = 0;
n=4; //N-Number of nodes present in the graph
While (i<n-1) do j = i + 1;
While (j<n) do
if A[i]<A[j] then swap (A[i], A[j]); end do;
i=i+1;
end do
```

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COMPUTER SCIENCE	**CSH T64**	**2017-18** **2018-19**	**B.Sc (Honors)**

SEMESTER – VI **Credits: 4**

INFORMATION SECURITY

Unit - 1: Introduction **12Hrs**

1.1 Security Trends
1.2 The OSI Architecture
1.3 Security Approaches
1.4 Principles of Security
1.3 Security Attacks
1.3.1 Passive Attacks
1.3.2 Active Attacks
1.4 Security Services
1.5 Security Mechanisms
1.5 A Model for Network Security

Unit – 2: Cryptography Concepts and Techniques **12Hrs**

2.1 Introduction
2.2 Plain Text and Cipher Text
2.3 Substitution Techniques
2.4 Transposition Techniques
2.5 Encryption and Decryption
2.6 Symmetric and Asymmetric Key Cryptography
2.7 Steganography
2.8 Key Range and Key Size
2.9 Possible Types of Attacks

Unit – 3: Symmetric Key and Asymmetric Key Ciphers **12Hrs**

3.1 Symmetric Key Ciphers
3.1.1 Introduction
3.1.2 Algorithm Types and Modes
3.1.3 Overview of Symmetric Key Croptography
3.1.4 Block Cypher Principles
3.1.5 Data Encryption Standard

3.2 Asymmetric Key Ciphers
3.2.1 Introduction
3.2.2 Overview of Asymmetric Key Cryptography
3.2.3 The RSA Algorithm
3.2.4 Digital Signatures
3.2.5 Knapsack Algorithm

Unit- 4: Message Authentication and Hash Functions **12Hrs**

4.1 Message Authentication
4.1.1 Authentication requirements
4.1.2 Authentication Functions: Public Key Encryption, MAC

4.2 Hash Functions

4.2.1 Simple Hash Functions

4.2.2 Birthday Attacks

4.2.3 Block Chaining Techniques

Unit- 5: Security Issues **12Hrs**

5.1 E-Mail Security

5.1.1 Pretty Good Privacy

5.1.2 S/MIME

5.2 IP Security Overview

5.2.1 Applications of IPSec

5.2.3 Routing Applications

5.3 IP Security Architecture

5.3.1 IPSec Documents

5.3.2 IPSec Services

5.3.3 Security Associations

5.4 Web Security

5.4.1 Web Security Considerations

5.4.2 Secure Socket Layer and Transport Layer Security - SSL Architecture

TEXT BOOKS

- Cryptography and Network Security : William Stallings, Pearson Education,4″‘ Edition
- Cryptography and Network Security : Atul Kahate, Mc Graw Hill Edition

REFERENCE BOOKS

- Cryptography and Network Security: C K Shyamala, N Harin i, Dr T R Padmanabhan, Wiley India, **1”** Edition.
- Cryptography and Network Security : Forouzan Mukhopadhyay, MC Graw Hill, 2″” Edition
- Information Security, Principles and Practice: Mark Stamp, Wiley India.
- Principles of Computer Security: WM.Arthur Conklin, Greg White, TMH
- Introduction to Network Security: Neal Krawetz, CENGAGE Learning
- Network Security and Cryptography: Bernard Menezes, CENGAGE Learning

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COMPUTER SCIENCE	**CSH T63**	**2017-18**	**B.Sc (Honors)**
		2018-19	

SEMESTER – VI **Credits: 2**

BIG DATA TECHNOLOGY

UNIT-I: **12Hrs**

Introduction to big data: What is Big Data, Structuring Big Data -Types of Big Data, Elements of big data-Volume, Velocity, Variety, Veracity, Big Data Analytics- Advantages of Big Data Analytics, Big Data Applications.

UNIT-II: **12 Hrs**

Introduction to Hadoop: What is Hadoop, Understanding distributed systems & Hadoop, Comparing SQL databases and Hadoop, Understanding Map Reduce-scaling word count program manually, scaling word count program in Map reduce.

UNIT-III **12 Hrs**

Hadoop Eco System, HDFS-HDFS Architecture, concept of blocks in HDFS-namenode, datanode, secondary namenode, job tracker, task tracker). Introducing HBase-HBase architecture, Regions, storing Big Data with HBase, Why hive, pig, scoop, zookeeper, flume, oozie.

UNIT-IV **12 Hrs**

Working with files in HDFS-Basic file commands, reading & writing to HDFS programmatically, Anatomy of Map Reduce program-Hadoop data types, Mapper, Reducer, Partitioner, Combiner, word counting with pre-defined mapper and reducer, Reading & Writing-input format, output format.

UNIT-V: **12 Hrs**

Background of YARN, limitations of map reduce, advantages of YARN, YARN architecture, working of YARN. Introducing Hive, Hive Services, Hive Variables, Hive Queries, Data types, Hive Built in functions, Hive - DDL, DML, and Data Retrieval Queries.

TEXT BOOKS:

1. BIG DATA (covers hadoop2, map reduce, Hive, Yarn, Pig, R and Data Visualization) Black Book , DreamTech Press.
2. Hadoop in Action by Chuck Lam, DreamTech Press.

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COMPUTER SCIENCE	**CSH P63**	**2017-18** **2018 - 19**	**B.Sc (Honors)**

SEMESTER – VI **Credits: 2**

BIG DATA LAB **30Hrs**

1. Implement the following Data structures in Java.
a)Linked Lists b) Stacks c) Queues d) Set e) Map

2. (i)Perform setting up and Installing Hadoop in its three operating modes:
Standalone, Pseudo distributed, Fully distributed.
(ii) Use web based tools to monitor your Hadoop setup.

3. Implement the following file management tasks in Hadoop
Adding files and directories retrieving files Deleting files Hint: A typical Hadoop workflow creates data files (such as log files) elsewhere and copies them into HDFS using one of the above command line utilities.

4. Run a basic Word Count Map Reduce program to understand Map Reduce Paradigm.
5. Write a Map Reduce program that mines weather data. Weather sensors collecting data every hour at many locations across the globe gather a large volume of log data, which is a good candidate for analysis with MapReduce , since it is semi structured and record-oriented.
6. Implement Matrix Multiplication with Hadoop Map Reduce.
7.Install and Run Hive.
8. Use Hive to create, alter, and drop databases, tables, views, functions and indexes.
9.Use hive to run DML and data retrieval queries.

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COMPUTER SCIENCE	**CSH PW64**	**2017-18** **2018-19**	**B. Sc (Honors)**

SEMESTER: V/VI **Credits: 4**

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.

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COMPUTER SCIENCE	CAB T22	**2016-17** **2017-18** **2018-19**	**B. COM/Computers**

SEMESTER – II **CREDITS: 4**

ENTERPRISE RESOURCE PLANNING

Unit-I: Introduction: **20 hrs**

1.1 Overview of enterprise systems
1.2 Evolution
1.3 Risks
1.3.1 Issues to be consider in people
1.3.2 Implementation
1.3.3 operation and maintenance of cross functional integrated ERP systems
1.4 Benefits

Unit- II: ERP Solutions and Functional Modules: **10hrs**

1.1 Overview of ERP software solutions
1.1.1 Small, medium and large enterprise vendor solutions
1.2 BPR and best business practices
1.2.1 Business process Management
1.3 Functional modules

Unit-III: ERP Implementation: **15hrs**

3.1 Planning Evaluation and selection of ERP systems
3.2 Implementation life cycle
3.3 ERP implementation Strategies
3.4 Data Migration

Unit-IV: Post Implementation: **10hrs**

4.1 Measuring the performance of the ERP system
4.2 Success and Failure factors of ERP Implementation

Unit-V: Emerging Trends on ERP: **20hrs**

5.1 ERP and Related technologies
5.2 Data Warehousing
5.3 Data Mining.
5.4 Business Analytics
5.4.1 Business Analytics Life Cycle
5.4.2 Business Analytics Process
5.4.3 Data concepts
5.4.4 Data exploration & visualization
5.4.5 Business Analytics as solution for business challenges.

Text Books:

1. Alexis Leon, ERP demystified, second Edition Tata McGraw-Hill, 2008.

Unit I: Chapter: 1, 2, 5, 6
Unit II: Chapter: 18, 10, 40
Unit III: Chapter: 25, 21, 20, 32
Unit IV: Chapter: 38, 35
Unit V: Chapter: 7, 11, 12

2. R. N. Prasad and SeemaAcharya, “Fundamentals of Business Analytics”, Wiley India Publication.

References:

1. Sinha P. Magal and Jeffery Word, Essentials of Business Process and Information System, Wiley India, 2012
2. Jagan Nathan Vaman, ERP in Practice, Tata McGraw-Hill, 2008
3. Vinod Kumar Grag and N.K. Venkitakrishnan, ERP- Concepts and Practice, PHI,2006.

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COMPUTER SCIENCE	**CAB T23**	**2016 -17** **2017-18** **2018-19**	**B. COM/Computers**

Semester: II **Credits: 3**

OFFICE AUTOMATION TOOLS

Unit-I: **10 Hours**

Calc Spreadsheet: Parts of Calc window, entering and editing data in worksheet, number formatting in Calc, different cell references, how to enter and edit formula in Calc, auto fill and custom fill, printing options.

Unit-II: **10 Hours**

Formatting options: Different formatting options, formulae and functions, Functions: Meaning and advantages of functions, different types of functions available in Calc.

Unit-III: **15 Hours**

Charts: Parts of chart, chart creation using wizard, chart operations, data maps, graphs, sorting, filtering. Calc sub totals, scenarios, what-if analysis Macro: Meaning and advantages of Macros, creation, editing and deletion of macros - Creating a macro, how to run, how to delete a macro.

Unit-IV: **15 Hours**

Base Database: Features of Base Database, Creating a Database, Parts of Access. Tables: table creation using design view, data sheet view, import table, link table. Forms: The Form Wizard, design view, columnar, tabular, data sheet, chart wizard.

Unit- V: **10 Hours**

Creating and using select queries, Returning to the Query Design, Multi-level sorts, finding incomplete matches, showing all records after a Query, saving queries - Crosstab Queries. Reports.

Relational Databases: Flat versus Relational, Viewing Relationships, Defining and Redefining Relationships, Creating and Deleting Relationships.

REFERENCE BOOKS:

1. Ron Mansfield, Working in Microsoft Office, Tata McGraw Hill(2008)
2. Ed Bott, Woody Leonhard, Using Microsoft Office 2007, Pearson Education(2007)
3. Sanjay Saxsena, Microsoft Office, 4.Microsoft Office, BPB Publications

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COMPUTER SCIENCE	CAB P23	**2016 -17** **2017-18** **2018-19**	**B. COM/Computers**

SEMESTER - II **CREDITS: 2**

Office Automation Tools Lab **30Hrs**

1. Create a student's marks list and calculate total and average in calc
2. Create a student's marks table and convert them into different types of charts in calc

3. Create a student table and sort the student names in ascending order in calc
4. Write some calc functions
5. Create a pivot table report in calc spread sheet
6. Create a table in design view in base database
7. Create a query in design view in base database
8. Create a form using form wizard in base database
9. Creating a relationship between tables
10. Create a report using report wizard in base database

SEMESTER – IV **Credits – 3**

PHOTOSHOP

UNIT- I: **10 Hours**

Multimedia system Requirements, Introduction to multimedia, Multimedia application, Virtual reality, types of colours, Colour Formats used for different types of Medias, types of graphics, Difference between Raster Graphic & Vector Graphic and its uses, Graphic Design, types of objects, audio formats, video formats, image formats, text document formats, Typographic alignments -types of video editing, Types of printers - printing outputs.

UNIT- II: **10 Hours**

Introduction: Getting started with Photoshop, Document dimension, Orientation Color mode, Resolution - types of resolutions, title bar- menu bar - options bar - Status bar, text alignments - text wrapping options - working character and paragraph properties - text colors, Photoshop Ruler grid and guide layers - drawing tool bar – layers.

UNIT – III: **15 Hours**

Drawing tool bar: types of selections - selection fill and stroke, move tool- working with crop tool- working with slice tool, working with paint tools- brush styles, working with healing tool, working with clone stamp tool - working eraser tool- eraser styles - working with solid colors, working with gradient tools - blur and sharp tool - working with pen tool - working with custom shapes - working with zoom and hand tools- eye dropper, Layers: new layer - delete layer- fill layer - gradient layer - patterns - working with quick mask, purpose of image colour adjustment tools - working with levels- working with curves- Color balance - working with brightness and contrast working photo filters- hue and saturation- pasteurized and threshold colours - blending options importance - working with blending options- layer opacity -layer mode.

UNIT – IV: **15 Hours**

Menus: Purpose of menus , New file- open file- print file - copying data - cut data- paste data, Saving custom shape- working with trans form options- define brushes- working with modes and adjustments, Changing image size and canvas size- working with layers - merge - merge visible link layers- importance of filters- working with filters.

UNIT –V: **10 Hours**

Editing your photo shoot, Presentation, Commercial adds, Brochure, Pamphlets, Visiting card, Wedding card.

REFERENCE BOOKS

1. Principles of Multimedia by Ranjan Parekh (Author)
2. Fundamentals of Multimedia2O05 by Li and Ze -Nian
3. Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, Color Grading & Graphic...l9 Febru ary 2016 by David Maxwell
4. Adobe Photoshop CC Bible Paperback -7 Jan20l4
5. Adobe Photoshop CC Classroom in a Book Kindle Edition by Adobe Creative Team (Author)
6. Photoshop: The Complete Beginners Guide To Mastering Photoshop And Creating Amazing And Visually Stunning Photos (Adobe Photoshop, Photoshop, Digital Photography) Kindle Edition

** Student'Activities like Seminars, Assignments, Fieldwork, Study Projects, Models etc. are Part of Curriculum for all units in all papers

Suggested additional Student Activity:

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

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COMPUTER SCIENCE	CAB P41	**2016 - 17** **2017-18** **2018-19**	**B. COM/B**

SEMESTER – IV **Credits – 2**

PHOTOSHOP LAB

30Hrs

1. Visiting card
2. Cover page of a book
3. Paper add for calling tenders
4. Passport photo design
5. Pamphlet
6. Broacher designing
7. Titles designing
8. Custom shapes creation
9. Web template design
10. Black & white and color photo conversion
11. Image size modification
12. Wedding album designing
13. Background changes
14. Box package cover designing
15. Texture and patterns designing
16. Filter effects & Eraser effects

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Computer Science	**CAB T41A**	**20017-18** **2018-19**	**B.Com(Computers)**

SEMESTER – IV **Credits: 4**

DIGITAL IMAGING

Total Hrs: 60

UNIT-I: Introduction **12 HRS**

1.1 Types of Graphics
1.1.1 Raster Vs Vector Graphics
1.2 Types of Objects
1.2.1 Audio formats
1.2.2 Video formats
1.2.3 Image formats
1.2.4 Text document formats
1.3 Types of video editing
1.4 Different colour modes

UNIT-II **12 HRS**
1.1 What is GIMP-GIMP tool box window
1.2 layers Dialog
1.3 Tool Options Dialog
1.4 Image window
1.5 Image window menus

UNIT-III: Improving Digital Photos&Introduction to layers **12 HRS**
3.1 Opening files
3.2 rescaling saving files
3.3 cropping
3.4 Brightening & Darkening
3.5 Rotating
3.6 Sharpening
3.7 fixing Red Eye
3.8 What is layer
3.8.1 using layer to add text
3.8.2 using move tool-changing colours
3.8.3 simple effects on layers-linking layers together
3.8.4 performing operations on layers
3.8.5 using layers to copy and paste-tour of layers dialog
3.8.6

UNIT-IV: Drawing & Selection: **12 HRS**
4.1 Drawing lines and curves
4.2 changing colors
4.3 brushes
4.4 erasing
4.5 drawing rectangles,circles, other shapes
4.6 outlining and filling regions
4.6.1 filling with patterns and gradients
4.6.2 importing brushes or gradients or making your own

4.7 Working with selections
4.7.1 select by colour and fuzzy
4.7.2 select Bezier paths
4.7.3 intelligent scissors tool
4.7.4 modifying selections with selection modes

UNIT-V: Erasing and Touching Up& Filters **12 HRS**

5.1 Dodge and burn tool
5.2 smudging tool
5.3 clone tool
5.4 sharpening using convolve tool
5.5 Bluring with Gaussian Blur
5.6 Correcting Color Balance
5.7 Hue,saturation
5.8 Color balance using curves and levels
5.9 Filters
5.9.1 Blur
5.9.2 Enhance
5.9.3 Distort
5.9.4 Noise Filters

Text Book

Beginning GIMP From Novice to professional byAkkanaPeck,Apress

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Computer Science	**CAB P41A**	**2017-2018** **2018-19**	**B.Com(Computers)**

SEMESTER – IV **Credits: 2**

DIGITAL IMAGING LAB **30Hrs**

Create following items using different options gimp

1. Visiting card
2. Cover page of a book
3. Paper add for calling tenders
4. Passport photo design
5. Pamphlet
6. Broacher designing
7. Titles designing
8. Custom shapes creation
9. Web template design
10. Black & white and color photo conversion
11. Image size modification
12. Wedding album designing
13. Background changes
14. Box package cover designing
15. Texture and patterns designing
16. Filter effects & Eraser effects

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Computer Science	**CAB T53**	**2017-18** **2018-19**	**B.Com(Computers)**

SEMESTER:V **No of Credits :4**
Total: 60 Hours

Programming in C

Unit- I: **15Hrs**

1. Introduction to programming
1.1 Introduction to computer software
1.2 Classification of computer software
1.2.1 System Software - Compiler, interpreter, linker and loader
1.3 Programming languages.

2. Introduction to C
2.1 Structure of C Program
2.2 Writing the first C Program
2.3 File used in C Program
2.4 Compiling and Executing C Programs
2.5 Using Comments
2.6 Keywords
2.7 Identifiers
2.8 Basic Data Types in C
2.9 Variables – Numeric, character, Declaring, Initializing
2.10 Constants – Integer, Float, Character, String Declaring Constants
2.11 I/OStatements in C –Formatting I/O, Printf(), Scanf()
2.12 Operators in C- Arithmetic, Relational, Equality, Logical, Unary, Conditional, Bitwise, Assignment, Comma, Size of
2.13 Programming Examples
2.14 Type Conversion and Type Casting

Unit-II:

3. Decision Control and Looping Statements **10Hrs**
3.1 Introduction to Decision Control Statements
3.2 Conditional Branching Statements – If, If-Else, If-Else-if, Switch Case
3.3 Iterative Statements – While, Do-While, For
3.4 Break and ContinueStatement
3.5 Go to Statement

Unit- III:

4. Functions **10Hrs**
4.1 Introduction
4.2 Using functions
4.3 Function declaration/ prototype
4.4 FunctionDefinition
4.5 Function call
4.6 Return statement
4.7 Passing parameters – Call By Value, Call By Referecne
4.8 Scope of variables
4.9 StorageClasses
4.10 Recursive function – Factorial of a Number.

Unit- IV:

5. Arrays **10Hrs**

5.1 Introduction
5.2 Declaration of Arrays
5.3 Accessing elements of the Array – Calculating the Address of Array elements
5.4 StoringValues in Array
5.5 Calculating the length of the Array
5.6 One dimensional arrayfor inter-function communication
5.7 Two dimensional Arrays
5.8 Multi-DimensionalArrays

6. Strings

6.1 Introduction String functions

Unit-V:

7. Pointers: **15Hrs**

7.1 Understanding Computer Memory
7.2 Introduction to Pointers
7.3 declaring PointerVariables
7.4 Passing Arguments to Functions using Pointer
7.5 Pointer and Arrays
7.6 Passing Array toFunction.

8. Structure, Union, and Enumerated Data Types

8.1 Introduction – Structure Declaration, Typedef, Initialization, Accessing the members of a structure.
8.2 Nested Structures
8.3 Arrays of Structures
8.4 Structures and Functions
8.5 Unions – Declaring, Accessing, Initialization
8.6 Enumerated Data Types – Enum, Using Typedef, Assigning Values to Enumerated Variables.

Prescribed Books:

1. ReemaThareja, Introduction to C programming, Oxford University Press.

Reference Books:

1. E Balagurusamy, Computing Fundamentals & C Programming – Tata McGraw-Hill, 2008.
2. Ashok N Kamthane, Programming with ANSI and Turbo C, Pearson Publisher, 2002.
Henry Mulish & Hubert L.CooReemaThareja: The Spirit of C: An Introduction to ModernProgramming, Jaico Publishing House,1996.

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Computer Science	**CAB P52**	**2017-18** / **2018-19**	**B.Com(Computers)**

SEMESTER:V **No of Credits :2**

PROGRAMMING IN C LAB **30Hrs**

1. Write a C program to calculate the expression: ((a*b)/c)+(a+b-c)
2. Write a C program to calculate $(a+b+c)^3$.
3. Program to convert temperature from
   a. Celsius to Fahrenheit.
   b. Fahrenheit to Celsius.
4. Write a C program to calculate the Compound Interest.
5. Program to convert Hours into seconds.
6. Write a C program to Fine Biggest of Three numbers.
7. Write a C program to read student marks in five subjects and calculate the Total, Average and Grade according to the following conditions:
   i. If average >=75 grade is _A‘.
   ii. If average >=60 and <75 grade is _B‘.
   iii. If average >=50 and <60 grade is _C‘.
   iv. Otherwise grade is _D‘.
   v. Check that marks in each subject >= 35.

8. Write a C program to find biggest of two numbers using Switch – Case.
9. Program to display number of days in given month using Switch – -Case.
10. Write a C program to check whether the given number is Prime or Not.
11. Write a program to
    i. Check whether given number is Palindrome or Not.
    ii. Find the Reverse of a given number.

12. Program to check whether a given number is
    i. Strong or Not.
    ii. Armstrong or Not.
    iii. Perfect or Not.

13. Write a C program to print Fibonacci Series.
14. Write a C Program to print Prime Numbers up to given range.
15. Write a program to print multiplication tables up to given range.
16. Write a C program to perform
    i. Matrix Multiplication.
17. Program to display Student Details using Structures.
18. Program to swap two numbers using different parameter passing techniques.

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Computer Science	**CAB T51**	**2017-18** **2018-19**	**B.Com(Comuters) / B.BA**

SEMESTER:V **No of Credits :4**

Teaching Hrs.: 75

E - Commerce

UNIT 1 **(15 Hours)**

E-Commerce: Introduction, meaning, advantages and disadvantages-Emergence of Internet –Emergence of World Wide Web (WWW)-EDI-E-Commerce Opportunities for Industries –E-Transition Challenges for Indian Corporate Business Models for Ecommerce: E-Business model based on relationship of transaction parties-E-Business model based on relationship of transaction types-Information Technology Act 2000- Contents-Important concepts introduced in the Act-Positive aspects for corporate sector.

UNIT II **(15 Hours)**

E-Customer Relationship Management: Customer Relationship Management – Typical Business Touch-points-Orbitz. E-Supply Chain Management: Supply Chain-The new way-E-logistics of UPS-Smart chains, Smarter gains-The payoff-Seven ways to reduce inventory-E-SCM provides "real-time" benefits-E-SCM the strategic advantage-Benefits-E-supply chain components-E-supply chain architecture-Major trends in E-SCM

UNIT III **(15 Hours)**

E-Marketing: Meaning and Definition- Traditional Marketing Vs. E- Marketing – Online Marketing- E- Advertising-Internet Marketing Trends- E-Branding.

UNIT IV **(15 Hours)**

E- Payment System: Meaning- Digital Payment requirements- Digital Token based EPayment
System – Classification of New Payment System – Properties of E- Cash- Cheque payment system on Internet- Risk and E-Payment System- Designing E-Payment System- Digital Signature.

UNIT V **(15 Hours)**

Speculations- Kinds of Speculators – Speculative Transactions – Services or Functions of Stock Exchange. E- Trading: SEBI- Guidelines- Procedure for Online Trading. E- Banking: Meaning- Traditional Banking Vs. E-Banking – Facets of E-Banking.

TEXT BOOK

1. E- Commerce- A Managerial Perspective –, P.T. Joseph,Prentice- Hall of India, New Delhi, 2005

BOOKS FOR REFERENCE:

1. Daniel Amor, E Business R(Evolution), Pearson Edude, New Delhi,2005.
2. Krishnamurthy, E-Commerce Management, Vikas Publishing House, New Delhi, 2005.
3. David Whiteley, E- Commerce: Stratergy, Technologies and Applications, Tata McGraw Hill, New Delhi, 2005.

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Computer Science	**CAB T52**	**2017-18**	**B.Com(Computers)**

SEMESTER:V **No of Credits :3**

Total: 60 Hrs

WEB TECHNOLOGY

Unit-I:

Introduction: HTML, XML, and WWW, Topologies - Bus, Star, Ring, Hybrid, Tree; LAN,WAN,MAN. **HTML:** Basic HTML, Document body, Text, Hyperlinks, Adding more formatting, Lists, Tables using colors and images. **More HTML:** Multimedia objects, Frames, Forms towards interactive, HTML document heading.

Unit-II:

Cascading Style Sheets: Introduction, using Styles, simple examples, your own styles, properties and values in styles, style sheet, formatting blocks of information, layers.

Unit-III:

Introduction to JavaScript: What is DHTML? , JavaScript, basics, variables, string manipulations, mathematical functions, statements, operators, arrays, functions.

Unit-IV:

Objects in JavaScript: Data and objects in JavaScript, regular expressions, exception handling, built-in objects, and events.

Unit-V:

DHTML with JavaScript: Data validation, opening a new window, messages and confirmations, the status bar, different frames, rollover buttons, moving images, multiple pages in single download, text only menu system.

Text Book:

1. Uttam Kumar Roy, Web Technologies, Oxford University Press.

References:

1. Kogent Learning Solutions Inc.(Author), “Black Book HTML 5.0”, dreamtech.
2. Thomas A. Powell, “Complete reference HTML 5.0”, McGraWHo;;.
3. Web Technology, PHI Publications.

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Computer Science	**CAB P51**	**2017-18** **2018-19**	**B.Com(CA)**

SEMESTER:V **No of Credits :2**

Web Technology LAB **30Hrs**

1. Basic Tags in HTML.
2. Write a HTML page to print Hello World in bold and italic font.
3. Write a program to create lists.
4. Create a HTML file which displays 3 images at LEFT, RIGHT and CENTER respectively in the browser.
5. Create a HTML file which contains hyperlinks.
6. Create table with ROWSPAN and COLSPAN attribute of TABLE in HTML (Prepare timetable of your class).Include CELLSPACING & CELL PADDING
7. Introduction to CSS.
8. Write a program to create menu using HTML and CSS.
9. Develop static pages (using only HTML) of an online Book store. The pages should resemble: www.amazon.com The website should consist the following pages. Home page, Registration and user Login,User profile page, Books catalog, Shopping cart, Payment By credit card, order confirmation.
10. Introduction to JavaScript.
11. Write a program to print date using JavaScript.
12. Write a program to Sum and multiply two numbers using JavaScript.
13. Write a program to Show use of alert, confirm and prompt box.
14. Write a program to redirect, popup and print function in JavaScript.
15. Create validation Form in JavaScript.
16. Validate the registration, user login, user profile and payment by credit card pages using JavaScript.

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Computer Science	**CAB T61**	**2017-18** **2018-19**	**B.Com(Computers)**

SEMESTER:VI **No of Credits :5**

Teaching Hrs: 75

DATABASE MANAGEMENT SYSTEM

Course Objective:

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

Course Outcome:

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 Databases and Database Users **15 Hours**

1.1 Introduction
1.2 Data and Information
1.3 Characteristics of the Database Approach
1.3.1 Self-Describing Nature of the a Database System
1.3.2 Insulation between Programs and Data, Data Abstraction
1.3.3 Support of Multiple Views of the data
1.3.4 Sharing of Data and multiuser Transaction Processing
1.4 Evolution of Database Systems

UNIT-II **15 Hours**

2.1 Traditional File Processing Systems
2.1.1 Disadvantages of Traditional File Processing Systems
2.2 The Database Approach
2.2.1 Data Models
2.2.2 Relational Databases
2.2.3 Data base management systems
2.3 Advantages of the Database Approach
2.4 Costs and risks of the database approach
2.5 Components of the Database Environment
2.6 Three-Schema architecture for database development
2.7 Managing the people involved in database development

UNIT-III Entity Relationship Model **15 Hours**

3.1 Introduction
3.2 Entity types, Entity sets, Attributes and Keys
3.2.1 Entities and Attributes
3.2.2 Entity Types, Entity Sets, Keys and Value Sets
3.3 Relationships, Relationship types, Roles, and Structural Constraints
3.3.1 Relationship Types, Sets and Instances
3.3.2 Relationship Degree, Role Names, and Recursive Relationships

3.3.3 Constraints on Relationship Types
3.3.4 Attributes of Relationship Types
3.4 Weak Entity Types
3.5 ER Diagrams, Naming Conventions, and Design Issues
3.5.1 Summary of Notation for ER Diagrams
3.5.2 Proper Naming of Schema Constructs

UNIT-IV Enhanced Entity-Relationship **15 Hours**

4.1 Subclasses , super classes, and inheritance
4.2 Specialization and Generalization
4.3 Constraints and characteristics of Specialization and Generalization
4.4 Data Abstraction and knowledge representation concepts
4.4.1 Classification and Instantiation
4.4.2 Identification
4.4.3 Aggregation and Association

The Relational Data Model, Relational Constraints

4.5 Introduction
4.6 Relational Model Concepts
4.6.1 Domains, Attributes, Tuples and Relations
4.6.2Relational Model Notation
4.7 Relational Constraints and Relational Database Schemas
4.7.1 Entity Integrity, Referential Integrity and Foreign Keys

UNIT-V SQL (STRUCTURED QUERY LANGUAGE) **15 Hours**

5.1 Introduction
5.2 Data Definition, Constraints and Schema changes in SQL
5.2.1 Schema AND Catalog Concepts in SQL
5.2.2 The CREATE TABLE Command and SQL Data Types and Constraints
5.2.3 The DROP SCHEMA and DROP TABLE Command
5.2.4 The ALTER TABLE Command
5.3 Basic Queries in SQL
5.3.1 The SELECT-FROM-WHERE Structure of SQL Queries
5.3.2 Dealing with Ambiguous Attribute Names and Naming (Aliasing)
5.3.3 Unspecified WHERE-Clause and Use of Asterisk (*)
5.3.4 Tables as sets in SQL
5.3.5 Substring Comparisons, Arithmetic Operators, and Ordering
5.4 Aggregate Functions and Grouping
5.5Insert, Delete, and Update Statements in SQL
5.5.1 The INSERT Command
5.5.2 The DELETE Command
5.5.3 The Update Command

Prescribed Books:

1. "Fundamentals of Database Systems" by R.Elmasri and S.Navathe
2. "Modern Database Management " by Jeffrey A.Hoffer,V.Ramesh, HeikkiTopi, Pearson
3. "Database System Concepts" by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010.

Reference Books:

1. "Database Management Systems" by Raghu Ramakrishnan, NcGrawhill,2002
2. "Prinicples of Database Systems" by J.D.Ullman
3. "An Introduction to Database Systems" by Bipin C Desai
4. "Fundamentals of Relational Database Management Systems" by S.Sumathi, S. Esakkirajan, Springer Publications

Student Activity:

1. Create your College database for placement purpose.
2. Create faculty database of your college with their academic performance scores.

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA :: VIJAYAWADA-10.

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

Computer Science	**CAB T62**	**2017-18**	**B.Com(Computers)**
		2018-19	

SEMESTER:VI **No of Credits :3**

PHP and My SQL **Total: 60 Hrs**

Unit-I:

Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output. Working with Functions: Defining Functions, Calling functions, returning the values from UserDefined Functions, Variable Scope, Saving State between Function calls with the Static statement, more about arguments.

Unit-II:

Working with Arrays: Arrays, Creating Arrays, Some Array-Related Functions. Working with Objects: Creating Objects, Object Instance. Working with Strings, Dates and Time: Formatting Strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

Unit-III:

Working with Forms: Creating Forms, Accessing Form - Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads. Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsettling Variables, Using Sessions in an Environment with Registered Users.

Unit-IV:

Working with Files and Directories: Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen (), Running Commands with exec(), Running Commands with system ( ) or passthru ( ). Working with Images: Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input.

Unit-V:

Interacting with MySQL using PHP: MySQL Versus MySQL Functions, Connecting to MySQL with PHP, Working with MySQL Data. Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

References:

1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education (2007).

2. XueBai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomson (2006).

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA :: VIJAYAWADA-10.

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

Computer Science	**CAB P63**	**2017-18** **2018-19**	**B.Com(Comuters)**

SEMESTER:VI **No of Credits :2**

PHP and My SQL LAB

30Hrs

Part – I (SQL)

1. Create a Department table with the following fields: DEPTNO, DNAME and LOCATION.
2. Describe the structure of 'DEPT' table.
3. Insert values into 'DEPT' table.
4. Select all values from 'DEPT' table.
5. Create EMPLOYEE table with the following fields: EMPNO, ENAME, JOB, MGR, HIRE DATE, SALARY, COMMISTION and DEPTNO.
6. Describe the structure of 'EMP' table.
7. Insert the values into 'EMP' table.
8. Select all the values from 'EMP' table.
9. Create table GRADE with the following fields: GRADE,LOSAL and HISAL.
10. Insert values into 'GRADE' table.
11. Select all the values from 'GRADE' table.
12. List all the employee information for department 10.
13. Find out the names of all employees.
14. Retrieve the list of names and salary of all employees.
15. Find the names of employees who have a salary equal to RS3000.
16. List the employee whose names starts with an 's'.
17. List the employee names ending with an 's'.
18. List the names of employees whose names have exactly 5 characters.
19. List the employee names having D as the second character.
20. List the employee names having two A'S in their name.
21. Display all employee names which have 'TH' or 'LL' in them.
22. List out EMPNO, ENAME and SALARY of the employees whose salary is between 1500 and 2000.
23. List the names of employees who belong to department 10,20.
24. List employee number of the employees who don't have the name of 'FORD','JAMES'(OR)'JONES'.
25. Display all the different job types.
26. Retrieve all rows from EMP table for department 30 and order by name.
27. List the employee names and HIREDATES in descending order of HIREDATE.
28. Retrieve department names and no's in ascending order of DNAME.
29. List all employees information who have a manager.
30. List name of the employees,job and commission of those employees who do the job of clerk or salesman and get no commission.
31. List the names and jobs of all clerks in department 20.
32. Display current data & time.
33. Display the concatenated string.
34. Display string 'SMITH' of first character as capital letter.
35. Display the length of a string 'SALESMAN'.
36. Display the string 'SALESMAN' in lower case.
37. Display all department names in upper case.
38. Display the value using ABS.

39. Display the value using CEIL.
40. Display the value using FLOOR.
41. Display the value using POWER.
42. Display the value using SQRT.
43. Display sysdate by adding 3 months and minus 2 months.
44. Display last day for given date.
45. Display month between two dates.
46. Display next day for given date.
47. Display day of the current date.
48. Display all employees who were hired during 1982.
49. List the no of employees working with company.
50. List the no of jobs available in the emp table.

Part – II (PHP and My SQL)

1. Create a static web page that shows your course details
2. Create a web page for online exam
3. Create a web page for login screen
4. Create a Javascript to demonstrate function
5. Create a Javascript to demonstrate click button
6. Create a web page that gives the pin number about your selected city
7. Write a script file that demonstrate number conversion system
8. Create a script file that shows the menu and prints the selected file into the browser
9. Write a script file that checks the file existence
10. Write a script that creates and delete the file
11. Write a script to write and append a file
12. Write a script to write and append a file
13. Create a web form that handles $_GET method
14. Create a web form that handles $_POST method
15. Write a program that prints different formats for a given value
16. Write a program that creates and prints the cookies information
17. Create a web page that use cookie to create a page counter
18. Write a web page that access session variables
19. Write a web page that access session variables
20. Write a PHP script that demonstrate the method of a child class overriding that of its parent
21. Create a script to handle an Exception in PHP
22. Write a PHP script to create table that contains student details in MySQL database
23. Write a PHP script to insert the data into MySQL database
24. Write a PHP script to retrieve the data from MySQL database
25. Write a SQL query to generate a report using stored procedures.

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA :: VIJAYAWADA-10.

(An Autonomous college in the jurisdiction of Krishna University, Machilipatnam)

COMPUTER SCIENCE	**MIT T11**	**2015-16**	**B.B.A**
		2016-17	
		2017-18	
		2018-19	

Semester – I **Credits: 4**

Information Technology For Managers

Unit -1: **10 Hours**

IT in modern Organization: basic concepts of information system -organizational structure and IT Support at different organizational levels managing information technology in organizations.Introduction to computer systems: introduction to computers-five generations of computers-classification of digital computers system.

Unit –II: **15 Hours**

Computer Hardware: computer hardware:central processing unit .control Unit, mathematical logical unit. Memory: memory organization –random access memory, DRAM,SRAM, ROM,registers.Factors affecting processor speed-instruction set,mechanical cycle Secondary storage devices: magnetic tapes.Magneticdisks, hard disk,flexibledisks,optical disk Input devices: key board,mouse, trackball, game controllers,scanners,voice reorganization,web cams,and digital cameras.OCR, OMR, MICR.OUT PUT DEVICES: monitors,CRT monitors,flat panel monitors,printers: daisywheel, dot matrix,ink jet printers-plotters,multimedia projector.

Unit III: **12 Hours**

Computer Software: system software and application software.operating system windows OS,Mobile device operating system,and notebook operating systems.Application software : Types of personal application software,spread sheet-data management –word processing-desktop publishing,graphics ,CAD,CAM,CIM,Multi media speech recognization software,groupware,software suits.Programming Languages: assembly language,procedural language,non-procedural language,natural programming language,hyper text mark-up language,,modelling language ,object oriented programming language .

Unit –IV: **15 Hours**

Telecommunication and Networks :Introduction ,Analog and Digital signals,modulation need of modulations, modems. Telecommunication System: communication processors:modem,multiplexers,front –end-processor. Communication media& channel : cable media, broad cast media channels twisted pair ,coaxial cable,fibres optical cable , micro wave,satellite,radio,cellular radio,infrared global positioning systems.Networks: LAN,WAN,VAN,virtual private network (VPN). Internet,intranet and Extranets: THE evolution of the internet,service provided by the internet,World Wide Web.

Unit –V: **8 Hours**

New technologies in Information Technology:Introduction to hyper media,artificial intelligence and business intelligence,knowledge discovery in database:KDD data warehouse and datamarts.data mining and OLAP,ERP-Supply chain management ,CRM-geographic information system.

References: 1) Ms J.J.L.R Bharathi Devi, A Text Book of IT,Maruthi Book Depot,Guntur.

2) N.V.N Chary and Lalitha S.Fundamentals of Information Technology, KalyaniPublishers,Hyderabad.

3) TurbanRainerPotter:Introduction to Information Technology WileyIndia.

SRI DURGA MALLESWARA SIDDHARTHA MAHILA KALASALA, VIJAYAWADA 10
An autonomous college in the jurisdiction of Krishna University, A.P., India

COMPUTER SCIENCE	CSH TELS65	2019-20	B. Sc (H) Computer Science

SEMESTER – VI **Credits: 4**

CYBER CRIMES AND CYBER SECURITY (ELECTIVE)

Total Hrs. 60

UNIT – I Introduction to Cybercrime and Cyber offenses 12 Hrs

1.1 Introduction to Cyber Crime
1.1.1 Definitions: Cybercrime.(Including Definitions in Box 1.1)
1.1.2 Cybercrime and Information Security((including example in Box 1.2)
1.1.3 Who are Cybercriminals?
1.1.4 Classifications of Cybercrimes
1.1.5 Cybercrime: Indian Perspective(including Box 1.6)
1.1.6 Cybercrime and ITA 2000
1.1.7 Cybercrime: Global Perspective
1.2 Cyber offenses
1.2.1 Definitions for Hackers, Crackers, etc (in Box 2.1)
1.2.2 Categories of Cybercrimes
1.2.3 How Criminals plan attacks?
1.2.4 Social Engineering
1.2.5 Cyberstalking(including Cyber bullying definition in Box 2.8)
1.2.6 Cybercafe and Cybercrimes

UNIT – II Cybercrime: Mobile and Wireless Devices, Tools and Methods 12 Hrs

2.1 Cybercrime: Mobile and Wireless Devices
2.1.1 Proliferation of Mobile and Wireless Devices
2.1.2 Credit Card Frauds (including prevention tips in Box 3.2)
2.1.3 Authentication service security(excluding MPCS, N API Security)
2.1.4 Attacks on Mobile Phones

2.2 Tools and Methods used in Cybercrime
2.2.1 Proxy servers and Anonymizers(including being anonymous in Google Search in Box 4.2)
2.2.2 Password cracking
2.2.3 Keyloggers and spywares(including Malwares in Box 4.3)
2.2.4 Virus and worms
2.2.5 Trojan horses and Backdoors

2.2.6 Steganography

2.2.7 DoS and DDoS Attacks(DoS DDoS Definitions, Classification and Level of DoS, protecting from DoS/DDoS only)

UNIT – III Phishing and Identity Theft 12 Hrs

3.1 Phishing

3.1.1 Definition and Methods of Phishing

3.1.2 Phishing Techniques

3.1.3 Spear Phishing

3.1.4 Types of Phishing Scams

3.1.5 Phishing counter measures

3.2 Identity Theft

3.2.1 Personally Identifiable Information

3.2.2 Types of ID Theft

3.2.3 Techniques of ID Theft

3.2.4 Countermeasures

UNIT – IV Cybercrimes and Cyber security : Legal Persoectives 14 Hrs

4.1 Cybercrime and legal landscape around the world (Only Brief Comparative Study is needed regarding Cyber Law Scenario in various regions – Asia Pacific, Canada, US, Africa).

4.2 The Indian IT Act (Brief Description regarding various Chapters, Sections Only)

4.3 Amendments to the Indian IT Act

4.4 Cybercrime and Punishment

UNIT – V Case Studies and Career Opportunities 10 Hrs

5.1 Case Studies (Mini Cases):

5.1.1 State of Tamil Nadu vs. Suhas Katti Case

5.1.2 The Slumdog Millionaire Movie Piracy case

5.1.3 Malicious Hacking Case – Organ Donation Database Deleted

5.1.4 Cyber Pornography involving a Juvienile Criminal

5.1.5 Pune Citibank MphasiS call center fraud

5.1.6 NASSCOM vs. Ajay Sood and others

5.1.7 Swedish case of hacking and theft of trade secrets

5.1.8 Indian case of Cybersquatting

5.2 Careers in Cyber security

IT security organization roles and responsibilities

5.2.2 Career Paths in Cyber security

5.2.3 Cyber security Certifications

Text Book:

5.2.1

Guide to Computer Forensics and Investigations ,Processing Digital Evidence – Bill Nelson, Amelia Philips, Chris Steuart. 5th Edition, CENGAGE LEARNING.

COMPUTER SCIENCE	CSH TELS66	2019-20	B. C. A, B. Sc (H) Computer Science

SEMESTER – VI **Credits: 4**

CLOUD COMPUTING (ELECTIVE)

Total Hrs. 60

Course Objectives:

1. To understand the concepts of Cloud Computing.
2. To learn Taxonomy of Virtualization Techniques.
3. To learn Cloud Computing Architecture.
4. To acquire knowledge Cloud Applications.
5. To learn Industry Cloud Platforms.

Course Outcomes: At the end of this course student will:

1. Understand the concept of virtualization and how it has enabled the development of Cloud Computing
2. Know the fundamentals of cloud, cloud Architectures and types of services in cloud
3. Understand scaling, cloud security and disaster management
4. Design different Applications in cloud
5. Explore some important cloud computing driven commercial systems

Unit-1: **12Hours**

1.1. Virtualization :

1. Virtualization and cloud computing
2. Need of virtualization
3. cost
4. administration
5. fast deployment
6. reduce infrastructure cost

1.2 Limitations

1.3 Types of hardware virtualization:

1 Full virtualization
2 partial virtualization
3 para virtualization
4 Desktop virtualization
5 Software virtualization
6 Memory virtualization
7 Storage virtualization
8 Data virtualization
9 Network virtualization

1.4.Microsoft Implementation: Microsoft Hyper V ,Vmware features and infrastructure – Virtual Box - Thin client

Unit- II **12Hours**

2.1. Cloud Computing Overview

1 Origins of Cloud computing

2 Cloud components

2.2 Essential characteristics

1 On-demand self-service

2 Broad network access

3 Location independent resource pooling

4 Rapid elasticity

5 Measured service

Unit-III **12Hours**

3.1. Cloud scenarios

3.2. Benefits

3.2..1. scalability

3.2..2. simplicity

3.2..3. vendors

3.2..4. security.

3.3. Limitations

3.4. Sensitive information

3.5. Application development

3.6. Security concerns

3.7. privacy concern with a third party

3.8. security level of third party - security benefits

3.9. Regularity issues

3.9..1. Government policies

Unit-IV **12Hours**

4.1 Cloud architecture

4.1.1 Cloud delivery model

4.1.2 SPI framework

4.1.3 SPI evolution

4.1.4 SPI vs. traditional IT Model

4.2. Software as a Service (SaaS):

4.2.1. SaaS service providers –

4.2.1.1. Google App Engine,

4.2.1.2. Salesforce.com

4.2.1.3. Google platform

4.3. Benefits

4.3.1. Operational benefits

4.3.2. Economic benefits

4.4. Evaluating SaaS

4.5. Platform as a Service (PaaS)

4.5.1. PaaS service providers

4.5.2. Right Scale

4.5.3. Salesforce.com

4.5.4. Rackspace

4.5.5. Force.com

4.5.6. Services and Benefits

Unit-V **12Hours**

5.1. Infrastructure as a Service (IaaS)

5.1.1. IaaS service providers

5.1.2. Amazon EC2

5.1.3. GoGrid

5.1.4. Microsoft soft implementation and support

5.1.5. Amazon EC service level agreement

5.1.6. Recent developments

5.1.7. Benefits

5.2. Cloud deployment model

5.2.1. Public clouds

5.2.2. Private clouds

5.2.3. Community clouds

5.2.4. Hybrid clouds

5.2.5. Advantages of Cloud computing

Text Books:

1. Cloud Computing Bible by Barrie Sosinsky-Wiley Publication (Unit I, IV, V, Unit III – 3.3 : 3.9)

2. Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter TATA McGraw-Hill , New Delhi – 2010.(Unit – II)

3. NIST Cloud Computing Standards Roadmap e-resource (Unit III – 3.1, 3.2)

Reference Books:

1 Cloud Computing: Automating the Virtualized Data Center by Venkata Josyula

2 Virtualization for Dummies by Bernard Golden, First Edition

3 Understanding Microsoft Virtualization Solutions by Mitch Tulloch

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An autonomous college in the jurisdiction of Krishna University, A.P., India

COMPUTER SCIENCE	CSH TELS67	2019-20	B. Sc (H) Computer Science

SEMESTER – VI **Credits: 4**

ARTIFICIAL INTELLIGENCE (ELECTIVE)

Total Hrs. 60

UNIT –I

1. What is artificial Intelligence? **8 Hours**

1.1 The AI problems
1.2 The Underlying assumption.
1.3 What is AI technique?
1.4 The level of the Model.
1.5 Criteria for Success.
1.6 Some general References
1.7 One Final Word and Beyond.

2. Problems, Problem Spaces and Search **8 Hours**

2.1 Defining the problem as a State Space Search.
2.2 Production Systems
2.3 Problem Characteristics.
2.4 Production System characteristics.
2.5 Issues in the design of Search Programs
2.6 Additional Problems

Unit- II

3. Heuristic Search Techniques **8 Hours**

3.1 Generate and Test
3.2 Hill climbing
3.3 Best-First Search
3.4 Problem Reduction.
3.5 Constraint Satisfaction.
3.6 Means-ends Analysis.

4. Knowledge Representation Issues **8 Hours**

4.1 Representations and Mapping.
4.2 Approaches to Knowledge Representation.
4.3 Issues in Knowledge Representation.
4.4 The Frame Problem.

Unit III

5. Using Predicate Logic **6 Hours**

5.1 Representing Simple Facts in logic.

5.2 Representing Instance and ISA Relationships.

5.3 Computable Functions and Predicates.

5.4 Resolution.

5.5 Natural deduction.

6. Representing knowledge using Rules **12 Hours**

6.1 Procedural versus Declarative knowledge.

6.2 Logic Programming.

6.3 Forward versus Backward Reasoning.

6.4 Matching.

6.5 Control Knowledge.

Unit-IV

7. Symbolic Reasoning under Uncertainty **5 Hours**

7.1 Introduction to Nonmonotonic Reasoning.

7.2 Logics for Nonmonotonic Reasoning.

7.3 Implementation Issues.

7.4 Augmenting a problem-solver.

8. Implementations **2 Hours**

8.1 Depth-first Search.

8.2 Breadth-first Search.

Unit-V

9. Statistical Reasoning. **3 Hours**

9.1 Probability and Bayes Theorem.

9.2 Certainty Factors and Rule-Based systems.

9.3 Bayesian Networks.

9.4 Dempster-Shafer Theory.

9.5 Fuzzy Logic.

Prescribed book:

Artificial Intelligence -[Rich & Knight]-Third edition-McGraw-Hill (Chapters 1-8).