Course Code: 19CS2111

COMPUTER ORGANIZATION

B.Tech. II Year I Semester	**L**	**T**	**P**	**C**
	3	**-**	**-**	**3**

Course Objectives:

- To introduce principles of computer organization and the basic architectural concepts.
- To understand the design concepts of control memory and central processing unit
- To explain the computer arithmetic set of operations and instruction set design
- To understand the representation of data at the machine level and how computations are performed at machine level.
- To understand the memory organization and I/O organization.
- To become familiar with pipelining, vector processing and memory organization

Course Outcomes:

- Able to explain the principles of computer organization and simple register transfer language to specify various computer operations.
- Able to compare different addressing modes and instruction formats.
- Able to make use of all computer arithmetic operations
- Able to decide the type of data representations.
- Able to identify the types of memory organizations.
- Able to compare various types of pipeline and processing.

UNIT - I

Digital Computers: Introduction, Block diagram of Digital Computer, Definition of Computer Organization, Computer Design and Computer Architecture.

Register Transfer Language and Micro operations: Register Transfer language, Register Transfer, Bus and memory transfers, Arithmetic Micro operations, logic micro operations, shift micro operations, Arithmetic logic shift unit.

Basic Computer Organization and Design: Instruction codes, Computer Registers Computer Instructions, Timing and Control, Instruction cycle, Memory Reference Instructions, Input-Output and interrupt.

UNIT - II

Micro Programmed Control: Control memory, Address sequencing, micro program example, design of control unit. Central Processing Unit: General Register Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control.

UNIT - III

Data Representation: Data types, Complements, Fixed Point Representation, Floating Point Representation.

Computer Arithmetic: Addition and Subtraction, multiplication Algorithms, Division Algorithms, Floating – point Arithmetic operations. Decimal Arithmetic unit, Decimal Arithmetic operations

UNIT - IV

Input-Output Organization: Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt Direct memory Access.

Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory.

UNIT - V

Reduced Instruction Set Computer: CISC Characteristics, RISC Characteristics.

Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processor.

Multi Processors: Characteristics of Multiprocessors, Interconnection Structures, Interprocessor Arbitration, Inter processor communication and synchronization, Cache Coherence.

TEXT BOOKS:

[1] Computer System Architecture – M. Morris Mano, 3rd Edition, Pearson/PHI.

REFERENCE BOOKS:

[1] Computer Organization – Carl Hamacher ,ZvonkoVranesic, Safwat Zaky,5th Edition, McGraw-Hill.

[2] Computer Organization and Architecture – William Stallings 6th Edition, Pearson/PHI.

[3] Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition, PHI/Pearson

Course Code: 19IT2112

DATABASE MANAGEMENT SYSTEMS

B.Tech II Year I Semester	**L**	**T**	**P**	**C**
	3	**-**	**-**	**3**

Course Objectives:

- To understand the basic database concepts, applications, data models, schemas and instances.
- To familiarize Entity Relationship model for a database.
- To demonstrate the use of constraints and relational algebra operations.
- To become proficient in the basics of SQL and construct queries usingSQL.
- To become familiar in the normalization techniques to organize data indatabases.
- To demonstrate the basic concepts of transaction processing and concurrency control.
- To familiarize the concepts of database storage structures and the access techniques

Course Outcomes:

- Demonstrate the basic elements of a relational database management system.
- Ability to design entity relationship model and convert entity relationship diagrams.
- Formulate SQL queries on thedata.
- Apply normalization for the development of application software.
- Analyze database transactions and analyze the methods to control them by applying ACID properties.

Analyze the query processing the optimization methods

UNIT – I

Introduction: Introduction and applications of DBMS, Purpose of database, Data Independence, Database System architecture- Levels, Mappings, Database, users and DBA DATABASE DESIGN-Database Design Process, ER Diagrams - Entities, Attributes, Relationships, Constraints, keys, extended ER features, Generalization, Specialization, Aggregation,Conceptual design with the E-Rmodel.

UNIT - II

The Relational Model: Introduction to the relational model, Integrity constraints over relations, Enforcing integrity constraints, Querying relational data, Logical database design: E-R to relational, Introduction to views, Destroying/altering tables and views.

Relational Algebra and Calculus: Preliminaries, relational algebra operators, relational calculus - Tuple and domain relational calculus, expressive power of algebra and calculus.

SQL: Basics of SQL, DDL,DML,DCL, structure – creation, alteration, defining constraints – Primary key, foreign key, unique, not null, check, IN operator, Functions - aggregate functions, Built-in functions – numeric, date, string functions, set operations, sub-queries, correlated sub- queries, Use of group by, having, order by, join and its types, Exist, Any, All , view and its types. Transaction control commands – Commit, Rollback, Save point, cursors, stored procedures, Triggers.

UNIT – III

Schema Refinement and Normal Forms: Introduction to schema refinement, functional dependencies, reasoning about FDs. Normal forms - 1NF, 2NF, 3NF, BCNF, properties of decompositions, normalization, schema refinement in database design, other kinds of dependencies ,overview of 4NF, 5NF, DKNF, case studies.

UNIT - IV

Transaction Management: Transaction concept, transaction state, implementation of atomicity and durability, concurrent executions, Serializability, recoverability, implementation of isolation, transaction definition in SQL, testing for Serializability.

Concurrency Control and Recovery System: Concurrency control, lock based protocols, time- stamp based protocols, validation based protocols, multiple granularity, and deadlock handling. Recovery system - failure classification, storage structure, recovery and atomicity, log based recovery, shadow paging, recoverywith concurrent transactions, buffer management, failure with loss of non-volatile storage, advanced recovery techniques, remote backupsystems.

UNIT – V

Query Processing and Optimization: Overview, measures of query cost, selection operation, sorting, join, evaluation of expressions, transformation of relational expressions, estimating statistics of expression results, evaluation plans, and materialized views.

Overview of Storage and Indexing: Tree structured indexing- intuition for tree indexes, indexed sequential access method (ISAM), B+ Trees - a dynamic treestructure.

TEXT BOOKS

[1] Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGrawHill, 3rd Edition .

[2] Database System Concepts, Abraham Silberschatz, Henry F. Korth, S. Sudarshan (2005), VI edition, McGraw-Hill, New Delhi, India.

REFERENCE BOOKS

[1] Fundamentals of Database Systems, Elmasri, Navathe, 7th Edition, Pearson Education, 2016.

[2] Introduction to Database Systems, C.J.Date PearsonEducation.

[3] Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.

Course Code: 19IT2113

DATA STRUCTURES THROUGH C++

B.Tech. II Year I Semester	**L**	**T**	**P**	**C**
	3	**1**	**-**	**4**

Course Objectives:

- To understand the basic concepts such as Abstract Data Types, Linear and Non Linear Data structures.
- To understand the behavior of data structures such as stacks, queues, trees, hash tables, search trees, Graphs and their representations.
- To choose an appropriate data structure for a specified application.
- To understand and analyze various searching and sorting algorithms.
- To learn to implement ADTs such as lists, stacks, queues, trees, graphs, search trees in C++ to solve problems.

Course Outcomes:

- Able to learn basics of object oriented program concepts.
- Ability to analyze the time and space complexities of algorithms.
- Ability to design programs using a variety of linear data structures such as stacks, queues, linked lists.
- Ability to design programs using a variety of non-linear data structures such as graphs, trees.
- Able to analyze and implement various kinds of searching and sorting techniques.
- Ability to choose appropriate data structures to represent data items in real world problems.

UNIT – I

C++ Programming Concepts: Review of C, input and output in C++, functions in C++- value parameters, reference parameters, Parameter passing, function overloading, function templates, Exceptions-throwing an exception and handling an exception, arrays, pointers, new and delete operators, class and object, access specifiers, friend functions, constructors and destructor, Operator overloading, class templates, Inheritance and Polymorphism. Basic Concepts - Data objects and Structures, Algorithm Specification-Introduction, Recursive algorithms, Data Abstraction, Performance Analysis-Time complexity, Space Complexity, Introduction to Linear and Non Linear data structures.

UNIT - II

Representation of single, two dimensional arrays: sparse matrices-array and Linked representations. Linear list ADT-array representation and linked representation, Singly Linked Lists- Operations Insertion, Deletion, and Circularly linked lists-Operations for circularly linked lists, Doubly Linked Lists- Operations- Insertion, Deletion.

Stack ADT-definition, array and linked implementations, applications-infix to postfix conversion, Postfix expression evaluation, and recursion implementation.

Queue ADT-definition, array and linked Implementations, Circular queues-Insertion and deletion operations.

UNIT - III

Trees – definition, terminology, Binary trees-definition, Properties of Binary Trees, Binary Tree ADT, representation of Binary Trees-array and linked representations, Binary Tree traversals, Threaded binary trees.

Priority Queues –Definition and applications, Max Priority Queue ADT implementation-Max Heap-Definition, Insertion into a Max Heap, Deletion from a Max Heap.

UNIT - IV

Searching - Linear Search, Binary Search, Hashing-Introduction, hash tables, hash functions, Overflow Handling.

Sorting-Insertion Sort, Selection Sort, Radix Sort, Quick sort, Heap Sort, Merge sort.

UNIT - V

Graphs–Definitions, Terminology, Applications and, Properties, Graph ADT, Graph Representations- Adjacency matrix, Adjacency lists, Graph Search methods - DFS and BFS, Complexity analysis.

Search Trees-Binary Search Tree ADT, Definition, Operations- Searching, Insertion and Deletion, Balanced search trees-AVL Trees-Definition and Examples only, B-Trees-Definition and Examples only, Red-Black Trees-Definitions and Examples only, Comparison of Search Trees.

TEXT BOOKS:

[1] Data structures, Algorithms and Applications in C++, 2nd Edition, SartajSahni, Universities Press.

[2] Data structures and Algorithms in C++, Adam Drozdek, 4th edition, Cengage learning.

REFERENCE BOOKS:

[1] Data structures with C++, J. Hubbard, Schaum's outlines, TMH.

[2] Data structures and Algorithms in C++, M.T. Goodrich, R. Tamassia and D. Mount, Wiley India.

[3] Data structures and Algorithm Analysis in C++, 3rd edition, M. A. Weiss, Pearson. [4] Classic Data Structures, D. Samanta, 2nd edition, PHI.

Course Code: 19BS2115

DISCRETE MATHEMATICAL STRUCTURES

B.TECH II Year I SEM	L	T	P	C
	3	-	-	3

Prerequisites: An understanding of Mathematics in general is sufficient.

Course Objectives

- Translate statements from a natural language into its symbolic structures in logic.
- Define the syntax and semantics of propositional and predicate logic.
- To learn set theory, Relations, functions, ordering relations.
- To introduce generating functions and recurrence relations.
- To learn Graph Theory for solving problems.

Course Outcomes:

- Ability to understand and construct precise mathematical proofs.
- Ability to use Mathematical logic to formulate precise statements.
- Ability to perform operations on discrete structures such as sets, functions and relations.
- Ability to solve discrete mathematics problems that involve computing Permutations and combinations of a set.
- Ability to analyze and solve problems involving recurrence relations and generating functions.
- Ability to apply graph theory in solving computing problems**.**

UNIT – I:

Mathematical Logic and Proofs: Propositional Logic, Applications of Propositional Logic, Propositional Equivalence, Predicates and Quantifiers, Nested Quantifiers, Rules of Inference, Introduction to Proofs, Proof Methods and Strategy: Direct Proof, Indirect Proof, and Proof by Contradiction.

UNIT-II:

Sets and Relations: Sets, Functions, Cardinality of Sets, Relations and their Properties, Representing Relations, Matrix Representation of Relations, Closures of Relations, Equivalence Relations, Partial Ordering, Lattices.

Algebraic Structures: Introduction, Algebraic Systems, Semi groups and Monoids, Groups.

UNIT- III:

Elementary Combinatorics: Basics of Counting, Combinations and Permutations, Enumeration of Combinations and Permutations, Enumerating Combinations and Permutations with Repetitions, Enumerating Permutations with Constrained Repetitions, Binomial Coefficients, The Binomial and Multinomial Theorems.

UNIT IV:

Recurrence Relations: Sequences and Summations, Generating Functions, Calculating coefficients of Generating Functions, Recurrence Relations, Solving Linear Recurrence Relations by substitution method and Generating Functions, Inclusion-Exclusion, Applications of Inclusion-Exclusion.

UNIT - V

Graphs: Graphs and Graph Models, Graph Terminology and Special Types of Graphs, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths, Shortest-Path Problems, Planar Graphs, Chromatic number, Graph Coloring.

Trees: Introduction to Trees, Applications of Trees, Spanning Trees, Minimum Spanning Trees.

TEXT BOOKS:

[1] Discrete Mathematics and its Applications with Combinatorics and Graph Theory – Kenneth H Rosen, 7th Edition, TMH.

REFERENCE BOOKS:

[1] Discrete Mathematical Structures with Applications to Computer Science – J.P. Tremblay and R. Manohar, TMH.

[2] Discrete Mathematics for Computer Scientists and Mathematicians: Joe L. Mott, Abraham Kandel, Teodore P.Baker, 2nd Edition, Pearson Education.

[3] Discrete Mathematics- Richard Johnsonbaugh, 7th Edn., Pearson Education.

[4] Discrete Mathematics with Graph Theory – Edgar G.Goodaire, Michael M.Parmenter.

[5] Discrete and Combinatorial Mathematics – an applied introduction: Ralph. Grimald, 5th edition, Pearson Education.

Course Code: 19EC2117

DIGITAL ELECTRONICS

B.Tech. II Year ISem.	**L**	**T**	**P**	**C**
	3	**-**	**-**	**3**

Course Objectives:

- To introduce components such as diodes andBJTs.
- To know the applications ofcomponents.
- To give understanding of various types of logicfamilies.
- To learn basic techniques for the design of digital circuits and fundamental concepts used in the design of digitalsystems.
- To understand the concepts of combinational logic circuits and sequentialcircuits.

Course Outcomes:

- Upon completion of the Course, the students will be ableto:
- Know the characteristics of variouscomponents.
- Understand the utilization ofcomponents.
- Know about the logic families and realization of logicgates.
- Learn Postulates of Boolean algebra and to minimize combinationalfunctions.
- Design and analyze combinational and sequentialcircuits

UNIT - I

Diodes and Applications: Junction diode characteristics: Open circuited p-n junction, V-I characteristics, effect of temperature, diode resistance, diffusion capacitance, diode switching times, p-n junction as a rectifier, Tunnel diodes, photo diode, LED.

BJTs: Transistor characteristics: The junction transistor, transistor as an amplifier, CB, CE, CC configurations, comparison of transistor configurations, the operating point, self-bias or Emitter bias, bias compensation, thermal runaway and stability.

UNIT -II

Number Systems: Number systems, Complements of Numbers, Codes- Weighted and Non-weighted codes and its Properties, Parity check code and Hamming code.

DigitalCircuits:Digital(binary)operationsofasystem,ORgate,ANDgate,NOT,EXCLUSIVE OR gate, Universal gates, De Morgan Laws, NAND and NOR DTL gates, HTL and TTL gates, RTL and DCTL, Comparison of logicfamilies.

UNIT - III

Combinational Logic Circuits I: Basic Theorems and Properties of Boolean Algebra,Canonical and Standard Forms, Digital Logic Gates, Karnaugh Map Method, Product-of-Sums Simplification, Don’t-Care Conditions, NAND and NORImplementation.

UNIT -IV

Combinational Logic Circuits II: Binary Adder-Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers, De multiplexers, Parity generator.

UNIT - V

Sequential Logic Circuits: Sequential Circuits, Storage Elements: Latches and flipflops, AnalysisofClockedSequentialCircuits,StateReductionandAssignment, ShiftRegisters, Ripple Counters, Synchronous Counters, Random-Access Memory, Read-OnlyMemory.

TEXTBOOKS

[1] Integrated Electronics: Analog and Digital Circuits and Systems, 2/e, JaccobMillman, Christos Halkias and Chethan D. Parikh, Tata McGraw-Hill Education, India,2010.

[2] Digital Design, 5/e, Morris Mano and Michael D. Cilette, Pearson, 2011.

REFERENCE BOOKS

[1] Electronic Devices and Circuits, Jimmy J Cathey, Schaum’s outline series,1988.

[2] Digital Principles, 3/e, Roger L. Tokheim, Schaum’s outline series,1994

Course Code: 19IT2151

DATA STRUCTURES THROUGH C++ LAB

B.Tech. II Year I Semester	**L**	**T**	**P**	**C**
	-	**-**	**3**	**1.5**

Course Objectives:

- To write and execute programs in C++ to solve problems using data structures such as arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees.
- To learn to write C++programs to implement various sorting and searching algorithms

Course Outcomes:

- Able to identify the appropriate data structures and algorithms for solving real world problems.
- Able to implement various kinds of searching and sorting techniques.
- Able to implement data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems.

1. Write a C++ program that uses functions to perform the following:
    a) Create a singly linked list of integers.
    b) Delete a given integer from the above linked list.
    c) Display the contents of the above list after deletion.
2. Write a template based C++ program that uses functions to perform the following:
    a) Create a doubly linked list of elements.
    b) Delete a given element from the above doubly linked list.
    c) Display the contents of the above list after deletion.
3. Write a C++ program that uses stack operations to convert a given infix expression into its postfix equivalent, Implement the stack using an array.
4. Write a C++ program to implement a double ended queue ADT using an array, using a doubly linked list.
5. Write a C++ program that uses functions to perform the following:
    a) Create a binary tree of characters.
    b) Traverse the above Binary tree recursively in preorder, in order and post order.
6. Write a C++ program that uses function templates to perform the following:
    a) Search for a key element in a list of elements using linear search.
    b) Search for a key element in a list of sorted elements using binary search.
7. Write a C++ program that implements Insertion sort algorithm to arrange a list of integers in ascending order.
8. Write a template based C++ program that implements selection sort algorithm to arrange a list of elements in descending order.
9. Write a template based C++ program that implements Quick sort algorithm to arrange a list of elements in ascending order.
10. Write a C++ program that implements Heap sort algorithm for sorting a list of integers

in ascending order.

11. Write a C++ program that implements Merge sort algorithm for sorting a list of integers in ascending order.

12. Write a C++ program to implement all the functions of a dictionary(ADT) using hashing.

13. Write a C++ program that implements Radix sort algorithm for sorting a list of integers in ascending order.

14. Write a C++ program that uses functions to perform the following:
    a) Create a binary search tree of integers.
    b) Traverse the above Binary search tree non-recursively in in-order.

15. Write a C++ program that uses functions to perform the following:
    a) Create a binary search tree of integers.
    b) Search for an integer key in the above binary search tree non recursively.
    c) Search for an integer key in the above binary search tree recursively.

REFERENCE BOOKS:

[1] Data Structures using C++, D. S. Malik, 2nd edition, Cengage learning.

[2] Data Structures using C++, V. Patil, Oxford University Press.

[3] Fundamentals of Data structures in C++, 2nd edition, E. Horowitz, S. Sahni and D. Mehta, Universities Press.

[4] C++ Plus Data Structures, 4th edition, Nell Dale, Jones and Bartlett student edition.

Course Code: 19IT2152

DATABASE MANAGEMENT SYSTEM LAB

B.Tech. II Year I Semester	**L**	**T**	**P**	**C**
	-	**-**	**3**	**1.5**

Course Objectives:

- This lab enables the students to practice the concepts learnt in the subject DBMS by developing a database.
- Learn and practice data modeling using entity-relationship
- Understand Structured Query Language (SQL) and learn SQL syntax.
- Understand normalization process of a logical data model and correct any anomalies.
- Understand needs of database processing and learn techniques for controlling the consequences of concurrent data access.

Course Outcomes:

Ability to differentiate DBMS from traditional data storage mechanisms.

- Ability to design and implement a database schema for givenproblem.
- Apply the normalization techniques for development of application software to realistic problems.
- Ability to formulate queries using SQL DML/DDL/DCLcommands.
- Abilityto formulatecursors.
- Abilityto formulate programs usingtriggers.

Week 1: Student should decide on a case study and formulate the problem statement.

Week 2: Conceptual Designing using ER Diagrams (Identifying entities, attributes, keys and relationships between entities, cardinalities, generalization, specialization etc.).

Week 3: Converting ER Model to Relational Model (Represent entities and relationships in Tabular form, Represent attributes as columns, identifying keys) Note: Student is required to submit a document showing the database tables created from ER Model.

Week4:Normalization-Toremovetheredundanciesandanomaliesintheaboverelational tables,Normalize up to Third NormalForm

Week5: CreationofTablesusingSQL-OverviewofusingSQLtool,DatatypesinSQL, Creating Tables (along with Primary and Foreign keys), Altering Tables and DroppingTables

Week 6: Practicing DML commands- Insert, Select, Update, Delete

Week 7: Practicing Queries using ANY, ALL, IN, EXISTS, NOT EXISTS, UNION, INTERSECT, CONSTRAINTS etc.

Week 8: Practicing Sub queries (Nested, Correlated) and Joins (Inner, Outer and Equi).

Week 9: Practice Queries using COUNT, SUM, AVG, MAX, MIN, GROUP BY, HAVING,

Week 10: VIEWS: Creation and Dropping.

Week 11: a) PL/SQL programs using row type and column type variable.

b)PL/SQL program using conditional statements and loops. .

Week 12: Practicing Triggers - creation of trigger, Insertion using trigger, Deletion using trigger,Updating using trigger, compound triggers.

Week 13:Procedures- Creation of Stored Procedures, Execution of Procedure, and Modification of Procedure.

Week 14:Cursors- Declaring Cursor, Opening Cursor, Fetching the data, closing the cursor.

Week 15:Large objects-CLOB, NCLOB, BLOB and BFILE: PL/SQL programas how to create universal objects on CLOB or BLOB database columns.

TEXT BOOKS

[1] Introduction to SQL, Rick F.vanderLans, Pearsoneducation.
[2] Oracle PL/SQL, B.Rosenzweig and E.Silvestrova, Pearsoneducation.
[3] Oracle PL/SQL Programming, Steven Feuerstein,SPD.
[4] SQL & PL/SQL for Oracle 10g, Black Book, Dr. P.S. Deshpande, DreamTech.

REFERENCE BOOKS

[1] Oracle Database 11g PL/SQL Programming, M.Mc Laughlin,TMH.
[2] SQL Fundamentals, J.J. Patrick, Pearson Education
[3] Database systems using oracle ,Nilesh Shah

Course Code: 19EC2155

DIGITAL ELECTRONICS LAB

B.Tech. II YearISem.	**L**	**T**	**P**	**C**
	-	**-**	**2**	**1**

Course Objectives:

- To introduce components such as diodes,BJTs.
- To know the applications ofcomponents.
- To learn basic techniques for the design of digitalcircuits
- To learn basic fundamental concepts used in the design of digitalsystems.
- To understand the concepts of sequentialcircuits.

Course Outcomes: Upon completion of the Course, the students will be able to:

- Know the characteristics of variouscomponents.
- Understand the utilization ofcomponents.
- Understand the Postulates of Booleanalgebra.
- Known about the logic families and realization of logicgates.
- Know the minimize combinationalfunctions
- Design and analyze sequentialcircuits

LIST OF EXPERIMENTS

1. PN Junction diode characteristics A) Forward bias B) Reverse bias.

2. Half Wave Rectifier withoutfilters.

3. Full Wave Rectifier withoutfilters.

4. Switching characteristics of atransistor.

5. Input and output characteristics of BJT in CEConfiguration.

6. Input and output characteristics of BJT in CBConfiguration.

7. Realization of Boolean Expressions usingGates.

8. Realization of logic gates using DTL, TTL, RTLetc.

9. Design and realization logic gates using universalgates.

10. Generation of clock using NAND / NORgates.

11. Design a 4 – bit Adder /Subtractor.

12. Design and realization a Synchronous and Asynchronous counter usingflip-flops.

TEXT BOOKS

[1] Integrated Electronics: Analog and Digital Circuits and Systems, 2/e, JaccobMillman, Christos Halkias and Chethan D. Parikh, Tata McGraw-Hill Education, India,2010.

[2] Digital Design, 5/e, Morris Mano and Michael D. Cilette, Pearson, 2011.

REFERENCE BOOKS

[1] Electronic Devices and Circuits, Jimmy J Cathey, Schaum’s outline series,1988.

[2] Digital Principles, 3/e, Roger L. Tokheim, Schaum’s outline series,1994

Course Code: 19CS2211

OPERATING SYSTEMS

B.Tech II Year II Semester	L	T	P	C
	3	-	-	3

Course Objectives:

- Provide an introduction to operating system concepts (i.e, Operating System services,OSStructure)
- Introduces the way an ***operatingsystem*** can make the computer more productive by the effective **management of processes** (i.e., threads,scheduling, Synchronization)
- Introduce basic UNIX commands, system call interface for process management; inter process communication and I/O inUNIX.
- To understand the basic **memory management** of operating system
- To elucidate**deadlocks**, present a number of various techniques for preventing or avoiding or recovering from deadlocks in a computer system
- Introduce the issues to be considered in the design and development of operatingsystem with high **protection** and ease of access.

Course Outcomes:

- Will be able to control access to a computer, the files that may beshared and explain services,structure of operating systems.
- Demonstrate the knowledge of the components of computer and their respective roles in computing and illustrate various methods of process scheduling ,synchronization.
- Ability to recognize and resolve user problems related to memomy management with standard operating systemTehcniques.
- Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use eacheffectively to implement file system directory stuctures.
- Will be able to apply security mechanisms and techniques to handle deadlocks.
- will be able to do Programming and debugging C code at the system levelcommunicating directly with an operating system via system calls.

UNIT - I

Overview-Introduction:Operatingsystemobjectives,Userview,Systemview,Operatingsystem definition ,Computer System Organization, Computer System Architecture, OS Structure, OS Operations, Process Management, Memory Management, Storage Management, Protection and Security, Computing Environments. Operating System services, User and OS Interface, System Calls, Types of System Calls, System Programs, Operating System Design and Implementation, OSStructure.

UNIT - II

Process and CPU Scheduling: Process concepts-The Process, Process State, Process Control Block, Threads, Process Scheduling-Scheduling Queues, Schedulers, Context Switch, Operations on Processes, System calls-fork(), exec(), wait(), exit(), Interprocesscommunication-ordinarypipes and named pipes in Unix. Process Scheduling-Basic concepts, Scheduling Criteria, Scheduling algorithms, Multiple Processor Scheduling, Real-Time Scheduling, Thread scheduling, Linux scheduling and Windows scheduling. Process Synchronization, Background, The Critical Section Problem, Peterson's solution, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors, Synchronization in Linux andWindows.

UNIT - III

Memory Management and Virtual Memory–Memory Management Strategies: Background, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of Page Table. Virtual Memory Management-Background, Demand Paging, Copy-on-Write, Page Replacement, Page Replacement Algorithms, Allocation of Frames, Thrashing, Virtual memory in Windows.

UNIT - IV

Storage Management-File System: Concept of a File, System calls for file operations-**o**pen(), read(), write(), close(), seek(), unlink(), Access methods, Directory, File System Mounting, File Sharing, Protection.

File System Implementation: File System Structure, File System Implementation, Directory Implementation, Allocation methods, Free-space Management, Efficiency, and Performance. **Mass Storage Structure**: Overview of Mass Storage Structure, Disk Structure, Disk Scheduling, Disk Management, Swap space Management

UNIT - V

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Recovery from Deadlock. **Protection**: System Protection, Goals of Protection, Principles of Protection, Domain of Protection, Access Matrix, Implementation of Access Matrix, Access Control, Revocation of Access Rights.

TEXT BOOKS

[1] Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, JohnWiley

[2] Advanced programming in the UNIX environment, W.R. Stevens, Pearsoneducation.

REFERENCE BOOKS

[1] OperatingSystems–InternalsandDesignPrinciplesStallings,FifthEdition–2005, Pearson Education/PHI

[2] Operating System A Design Approach- Crowley,TMH.

[3] Modern Operating Systems, Andrew S. Tanenbaum 2nd edition,Pearson/PHI

[4] UNIX programming environment, Kernighan and Pike, PHI/ PearsonEducation

[5] UNIX Internals -The New Frontiers, U. Vahalia, PearsonEducation.

Course Code: 19IT2212

JAVA PROGRAMMING

B.Tech II Year II Semester	**L**	**T**	**P**	**C**
	3	**1**	**-**	**4**

Prerequisites:

- Fundamental knowledge of object-oriented concepts, terminology, and syntax, and the steps required to create basic Java programs.
- Previous experience with at least one programming language

Course Objectives:

- To understand object oriented programming concepts, and apply them in solving problems.
- To introduce the implementation of packages and interfaces.
- To introduce the concepts of exception handling and multithreading.
- To use the collection framework classes in to real time scenarios.
- To introduce the design of Graphical User Interface using applets and swing controls

Course Outcomes:

- Able to solve real world problems using OOP techniques.
- Able to understand the use of abstract classes.
- Able to solve problems using java collection framework and I/O classes.
- Able to develop multithreaded applications with synchronization.
- Able to develop applets for web applications.
- Able to design GUI based applications.

Unit I:

Java Basics: Brief introduction to Oops concepts.Introduction to Java ,JVM Architecture, Java Buzz words, Java Tokens- Comments, Identifiers, Keywords, Separators, Data types, enumerated types, Variables, constants, Type Conversion, Operators, Control Statements, Wrapper Classes, Structure of java with simple standalone program, arrays, console input and output, formatting output, constructors, methods – static and instance, parameter passing, access control modifiers, this reference, overloading methods and constructors, recursion, garbage collection, Inner classes, exploring String and String Buffer class.

Unit II:

Inheritance – Inheritance hierarchies, super and sub classes, super keyword, preventing inheritance: final classes and methods, the Object class and its methods

Polymorphism- dynamic binding, static binding, method overriding, abstract classes and methods.

Interfaces – Interfaces vs. Abstract classes, defining an interface, Multiple Inheritance through interface, extending interface.

Packages-Defining, Creating and Accessing a Package, Understanding

CLASSPATH, importing packages.

UNIT – III

I/O STREAM - Introduction, Byte-oriented streams, Character-oriented streams, File streams, Random-access file, Serialization.

Exception handling -- Dealing with errors, benefits of exception handling, classification of exceptions- exception hierarchy, checked exceptions and unchecked exceptions, usage of try, catches, throw, throws and finally, built in exceptions and user defined exceptions.

Multithreading – Differences between processes and threads, thread life cycle, creating threads, interrupting threads, multithreading, thread priorities, Synchronizing, inter-thread communication, thread group.

Unit IV:

Collection framework in java: Introduction, Util Package interfaces, List, Set, Map, Retrieving elements from collections, Collection interfaces: Set, Map, List ,Queue, Implementation classes : HashSet, HashMap, ArrayList, Stack, LinkedList, StringTokenizer, Scanner, more utilitiy classes.

Connecting to Database - JDBC Type 1 to 4 drives, connecting to a database, querying a database and processing the results, updating data with JDBC.

Unit V:

AWT - Introduction to AWT, Components, Event, Event-Delegation-Model, Listeners, Layout management and types – border, grid and flow Individual components: Label, Button, Checkbox, Radio Button. Choice, List, Menu, Text Field, Text Area, Adapter classes.

Applets - Inheritance hierarchy for applets, differences between applets and applications, life cycle of an Applet, passing parameters to applets.

Swings- Introduction to Swing, Swing vs.AWT, Hierarchy for Swing components.

TEXT BOOKS:

[1] Java ;The complete reference,7th edition, Herbert Schildt,TMH

[2] Understanding OOP with java, updated edition, T.Budd, Pearson education

REFERENCE BOOKS:

[1] JAVA Fundamentals- A comprehensive introduction, Herbert Schildt and Dale Skrien, TMH

[2] Java for Programmers, P.J.Deitel and H.M.Deitel, Perason education (OR) JAVA: How to program P.J.Deitel and H.M.Deitrl, PHI

[3] Thinking in java, Bruce Eckel, Pearson Education

[4] Object Oriented Programming through java, P.Radha Krishna, Universities Press.

[5] Programming in java, S.Malhotra and S.Choudhary, Oxford Univ. Press.

Course Code: 19IT2211

DATA COMMUNICATION AND COMPUTER NETWORKS

B.Tech II Year II Semester	**L**	**T**	**P**	**C**
	3	**0**	**0**	**3**

Prerequisites:

- Basics concepts of communication, digital electronics and computers.

Course Objectives:

- To introduce the fundamental various types of computer networks.
- To demonstrate the TCP/IP and OSI models with merits and demerits.
- To explore the various layers of OSI Model.
- To introduce UDP and TCP Models.

Course Outcomes:

- Students should beunderstand and explore the basics of Computer Networks and Various Protocols. He/She will be in a position to understand the World Wide Web concepts.
- Students will be in a position to administrate a network and flow of information further he/she can understand easily the concepts of network security, Mobile and adhoc networks.

UNIT – I: **Data Communications:**Components – Direction of Data flow – Networks – Componentsand Categories – Types of Connections – Topologies –Protocols and Standards – ISO / OSI model, Example Networks such as ATM, Frame Relay, ISDN

Physical Layer: Transmission modes, Multiplexing, Transmission Media, Switching, Circuit Switched Networks, Datagram Networks, Virtual Circuit Networks.

UNIT – II: **Data Link Layer:**Introduction, Framing, and Error – Detection and Correction – Parity – LRC – CRC Hamming code, Flow and Error Control, Noiseless Channels, Noisy Channels, HDLC, Point to Point Protocols.

Medium Access sub Layer: ALOHA, CSMA/CD, LAN – Ethernet IEEE 802.3, IEEE 802.5 – IEEE 802.11, Random access, Controlled access, Channelization.

UNIT – III :**Network Layer:**Logical Addressing, Inter-networking, Tunneling, Address mapping, ICMP, IGMP, Forwarding, Uni-Cast Routing Protocols, Multicast Routing Protocols.

UNIT – IV: **Transport Layer:**Process to Process Delivery, UDP and TCP protocols, Data Traffic,Congestion, Congestion Control, QoS, Integrated Services, Differentiated Services, QoS in Switched Networks.

UNIT – V: **Application Layer:**Domain name space, DNS in internet, electronic mail, SMTP, FTP, WWW, HTTP, SNMP.

TEXT BOOKS:

[1] Data Communications and Networking, Behrouz A. Forouzan , Fourth Edition TMH, 2006.

[2] Computer Networks, Andrew S Tanenbaum, 4th Edition. Pearson Education, PHI.

REFERENCES:

[1] Data communications and Computer Networks, P.C .Gupta, PHI.

[2] An Engineering Approach to Computer Networks, S. Keshav, 2nd Edition, Pearson Education.

[3] Understanding communications and Networks, 3rd Edition, W.A. Shay, Cengage Learning.

[4] Computer Networking: A Top-Down Approach Featuring the Internet. James F. Kurose & Keith W. Ross, 3 rd Edition, Pearson Education.

[5] Data and Computer Communication, William Stallings, Sixth Edition, Pearson Education, 2000

Course Code: 19MB2211

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

B.Tech II Year II Semester	**L**	**T**	**P**	**C**
	3	**0**	**0**	**3**

Course Objective:

- To learn the basic Business types, impact of the Economy on Business and Firms specifically. To analyze the Business from the Financial Perspective.

Course Outcome:

- The students will understand the various Forms of Business and the impact of economic variables on the Business. The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. The Students can study the firm's financial position by analysing the Financial Statements of a Company.

UNIT – I

Introduction to Business and Economics:

Business: Structure of Business Firm, Theory of Firm, Types of Business Entities, Limited Liability Companies, Sources of Capital for a Company, Non-Conventional Sources of Finance.

Economics: Significance of Economics, Micro and Macro Economic Concepts, Concepts and Importance of National Income, Inflation, Money Supply in Inflation, Business Cycle, Features and Phases of Business Cycle. Nature and Scope of Business Economics, Role of Business Economist, Multidisciplinary nature of Business Economics.

UNIT – II

Demand and Supply Analysis:

Elasticity of Demand: Elasticity, Types of Elasticity, Law of Demand, Measurement and Significance of Elasticity of Demand, Factors affecting Elasticity of Demand, Elasticity of Demand in decision making, Demand Forecasting: Characteristics of Good Demand Forecasting, Steps in Demand Forecasting, Methods of Demand Forecasting.

Supply Analysis: Determinants of Supply, Supply Function & Law of Supply.

UNIT- III

Production, Cost, Market Structures & Pricing:

Production Analysis: Factors of Production, Production Function, Production Function with one variable input, two variable inputs, Returns to Scale, Different Types of Production Functions.

Cost analysis: Types of Costs, Short run and Long run Cost Functions.

Market Structures: Nature of Competition, Features of Perfect competition, Monopoly, Oligopoly, and Monopolistic Competition.

Pricing: Types of Pricing, Product Life Cycle based Pricing, Break Even Analysis, and Cost Volume Profit Analysis.

UNIT - IV

Financial Accounting: Accounting concepts and Conventions, Accounting Equation, Double-Entry system of Accounting, Rules for maintaining Books of Accounts, Journal, Posting to Ledger, Preparation of Trial Balance, Elements of Financial Statements, and Preparation of Final Accounts.

UNIT - V

Financial Analysis through Ratios: Concept of Ratio Analysis, Liquidity Ratios, Turnover Ratios, Profitability Ratios, Proprietary Ratios, Solvency, Leverage Ratios (simple problems). Introduction to Fund Flow and Cash Flow Analysis (simple problems).

TEXT BOOKS:

[1] D. D. Chaturvedi, S. L. Gupta, Business Economics - Theory and Applications, International Book House Pvt. Ltd. 2013.

[2] Dhanesh K Khatri, Financial Accounting, Tata McGraw Hill, 2011.

[3] GeethikaGhosh, Piyali Gosh, Purba Roy Choudhury, Managerial Economics, 2e, Tata McGraw Hill Education Pvt. Ltd. 2012.

REFERENCES:

[1] Paresh Shah, Financial Accounting for Management 2e, Oxford Press, 2015.

[2] S. N. Maheshwari, Sunil K Maheshwari, Sharad K Maheshwari, Financial Accounting, 5e, Vikas Publications, 2013.

Course Code: 19BS2214

COMPUTER ORIENTED STATISTICAL METHODS

B.Tech II Year II Semester	L	T	P	C
	3	0	0	3

Pre-requisites: Mathematics courses of first year of study.

Course Objectives: To learn

- The theory of Probability, and probability distributions of single and multiple random variables
- The sampling theory and testing of hypothesis and making inferences
- Stochastic process and Markov chains.

Course Outcomes: After learning the contents of this paper the student must be able to

- Apply the concepts of probability and distributions to some case studies
- Correlate the material of one unit to the material in other units
- Resolve the potential misconceptions and hazards in each topic of study.

UNIT - I Probability: Sample Space, Events, Counting Sample Points, Probability of an Event, Additive Rules, Conditional Probability, Independence, and the Product Rule, Bayes' Rule.

Random Variables and Probability Distributions: Concept of a Random Variable, Discrete Probability Distributions, Continuous Probability Distributions, Statistical Independence.

Mathematical Expectation: Mean of a Random Variable, Variance and Covariance of Random Variables.

Unit- II: Discrete Distributions: Bernoulli, Binomial, Geometric Distributions and Poisson distribution.

Continuous Distribution: Continuous Uniform Distribution, Normal Distribution, Areas under the Normal Curve, Applications of the Normal Distribution, Gamma and Exponential Distributions.

Unit- III: Estimation & Test of Hypothesis: Concept of Point estimation and its properties (definition only), Concept of interval estimation with examples. Null & Alternative Hypothesis, Critical region, Type I and Type II errors, level of significance, one tail, two-tail tests. Large sample test for single proportion, difference of proportions, single mean, difference of means

Unit- IV: Small Sample tests: t-Test for single mean, difference of means, paired t-test, F-test.

ANOVA: Introduction, ANOVA for one-way classification only.

UNIT - V Stochastic Processes and Markov Chains: Introduction to Stochastic processes- Markov process. Transition Probability, Transition Probability Matrix, First order and Higher order Markov process, nstep transition probabilities, Markov chain, Steady state condition, Markov analysis.

TEXT BOOKS:

1. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye, Probability & Statistics for Engineers & Scientists, 9th Ed. Pearson Publishers.

2. S C Gupta and V K Kapoor, Fundamentals of Mathematical statistics, Khanna publications.

3. S. D. Sharma, Operations Research, Kedarnath and Ramnath Publishers, Meerut, Delhi

REFERENCE BOOKS:

1. T.T. Soong, Fundamentals of Probability And Statistics For Engineers, John Wiley & Sons Ltd, 2004. 2. Sheldon M Ross, Probability and statistics for Engineers and scientists, Academic Press.

Course Code:19CS2251

OPERATING SYSTEMS LAB

B.Tech II Year II Semester	L	T	P	C
	-	-	2	1

Course Objectives:

- To write programs in Linux environment using system calls.
- To implement the scheduling algorithms.
- To implement page replacement algorithms
- To implement file allocation methods.
- To understand and implement ipc mechanism using named and unnamed pipes.
- To develop solutions for synchronization problems using semaphores.

Course Outcomes:

- Ability to develop application programs using system calls in Unix.
- Ability to implement inter process communication between two processes.
- Ability to design and solve synchronization problems.
- Ability to simulate and implement operating system concepts such as scheduling, deadlock management, file management, and memory management.

Use Linux operating system and GNU C compiler.

List of Programs:

1. Write C programs to simulate the following CPU scheduling algorithms:

a) RoundRobin b)SJF

2. Write C programs to simulate the following CPU scheduling algorithms:

a) FCFS b) Priority

3. Write C programs to simulate the following File organization techniques:

a)Single level directory b)Two level c)Hierarchical

2. Write C programs to simulate the following File allocation methods:

a) Contiguous b)Linked c)Indexed

3. Write a C program to copy the contents of one file to another using system calls.
4. Write a C program to simulate Bankers Algorithm for DeadLock Avoidance
5. Write a C program to simulate Bankers Algorithm for DeadLock Prevention
6. Write C programs to simulate the following page replacement algorithms:

a) FIFO b)LRU c)LFU

7. Write C programs to simulate the following techniques of memory management:

a) Paging b)Segmentation

8. Write a C program to implement the ls | sort command. (Use unnamed Pipe)
9. Write a C program to solve the Dining- Philosopher problem using semaphores.
10. Write C programs to implement ipc between two unrelated processes using named pipe.

REFERENCE BOOKS:

[1] An Introduction to Operating Systems, P.C.P Bhatt, 2nd edition,PHI.

[2] Unix System Programming Using C++, Terrence Chan, PHI/Pearson.

[3] Modern Operating Systems, Andrew S Tanenbaum, 3rd Edition, PHI

Course Code:19IT2252

JAVA PROGRAMMING LAB

B.Tech II Year II Semester	L	T	P	C
	-	-	3	1.5

Prerequisites:

- Fundamental knowledge of object-oriented concepts, terminology, and syntax, and the steps required to create basic Java programs.
- Previous experience with at least one programming language

Course Objectives:

- To introduce Java compiler and eclipse platform.
- To make the student learn an object oriented way of solving problems using java.
- To make the students to write programs using multithreading concepts and handle exceptions.
- To make the students to write programs that connects to a database and be able to perform various operations.
- To make the students to create the Graphical User Interface using Applets, AWT Components & Swing Components.

Course Outcomes:

- Able to solve real world problems using OOP techniques.
- Able to understand the use of abstract classes.
- Able to solve problems using java collection framework and I/O classes.
- Able to develop multithreaded applications with synchronization.
- Able to develop applets for web applications.
- Able to design GUI based applications.

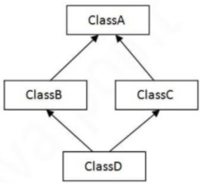
1) Use eclipse or Netbean platform and acquaint with the various menus, create a test project, add a test class and run it see how you can use auto suggestions, auto fill. Try code formatter and code refactoring like renaming variables, methods and classes. Try debug step by step with a small program of about 10 to 15 lines which contains at least one if else condition and a for loop.

2) a) Write a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c = 0$. Read in a, b, c and use the quadratic formula. If the discriminant b^2-4ac is negative, display a message stating that there are no real solutions?

b) The Fibonacci sequence is defined by the following rule. The first 2 values in the sequence are 1, 1. Every subsequent value is the sum of the 2 values preceding it. Write a Java program that uses both recursive and non-recursive functions to print the nth value of the Fibonacci sequence?

c) Write a Java program for sorting a given list of names in ascending order?

3) a) Write a program in java to implement the following hybrid inheritance?



b) Write a java program using runtime polymorphism to solve the following scenario: Consider a scenario where Bank is a class that provides a method to get the rate of interest. However, the rate of interest may differ according to banks. For example, SBI, ICICI, and AXIS banks are providing 8.4%, 7.3%, and 9.7% rate of interest.

c) Write a program in java to create Vehicle interface that would be implemented by different types of vehicle classes?

4)a) Write a program to create user defined packages in java.

b) Write a java program to create an abstract class and abstract methods

5)a) Write a Java program that reads on file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes?

b) Write a java program that loads names and phone numbers from a text file where the data is organized as one line per record and each field in a record are separated by a tab (\t).it takes a name or phone number as input and prints the corresponding other value from the hash table(hint: use hash tables)

6) Write a java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.

7) Write a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green with radio buttons. On selecting a button, an appropriate message with “stop” or “ready” or “go” should appear above the buttons in a selected color. Initially there is no message shown.

8) Write a java program to list all the files in a directory including the files present in all its subdirectories.

9) Write a JDBC program in java to retrieve and update data in a database.

10) Write a java program that implements Implementation Of Client-Server Communication Using TCP.

11) Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -,*, % operations. Add a text field to display the result. Handle any possible exceptions like divide by zero.

12)a) Develop an applet that displays a simple message.

b) Develop an Applet that receives an integer in one text field & compute its factorial value &returns it in another text filed when the button “Compute” is clicked

13) Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box

14) Suppose that a table named Table.txt is stored in a text file. The first line in the file header and the remaining lines correspond to row in the table. The elements are separated by commas. Write a Java program to display the table using labels in grid layout.

15) Write a Java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired. (Use adapter classes).

TEXT BOOKS:

[1] Java how to program,sixthedition,H.M.Ditiel

[2] Programming with java,M.P.Bhave

Course Code: 19IT2253

DATA COMMUNICATION AND COMPUTER NETWORKS LAB

B.Tech II Year II Semester	**L**	**T**	**P**	**C**
	-	**-**	**3**	**1.5**

Prerequisites:

- Basic Knowledge of C and networking concepts

Course Objectives:

- To understand the working principle of various communication protocols.
- To understand the network simulator environment and visualize a network topology andobserve its performance
- To analyze the traffic flow and the contents of protocol frames

Course Outcomes:

- Implement data link layer farming methods
- Analyze error detection and error correction codes
- Implement and analyze routing and congestion issues in network design.
- Implement Encoding and Decoding techniques used in presentation layer
- To be able to work with different network tools

List of Experiments:

Part - A

1. Identifying various Network Devices & Demonstration of Assigning MAC address.
2. Write a program to implement data link layer framing method bit stuffing.
3. Write a program to implement data link layer framing method character stuffing.
4. Write a program to implement data link layer framing method character count.
5. Write a program to implement Cyclic Redundancy Check(CRC 12 ,CRC 16 and CRC CCIR) on a data set of characters.
6. Implement Dijsktra’s algorithm to compute the shortest path through a network.
7. Implement distance vector routing algorithm for obtaining routing tables at each node.
8. Take an example subnet of hosts and obtain a broadcast tree for the subnet.
9. Write a program to implement encryption and decryption.
10. Write a program for congestion control using Leaky bucket algorithm.

Part - B.

All the Experiments may be Conducted using Network Simulation software like NS-2,NSG-2.1 and Wire SHARK/equivalent software.

Note: Experiments Performance may be evaluated through simulation by using the parameters Throughput, Packet Delivery Ratio, Delayetc.

11. Evaluate the performance of various LAN Topologies
12. Evaluate the performance of TCP and UDP Protocols
13. Evaluate the performance of IEEE 802.11 and IEEE 802.15.4
14. Capturing and Analysis of TCP and IP Packets
15. Simulation and Analysis of ICMP and IGMP Packets
16. Analysis of HTTP, DNS and DHCP Protocols

TEXT BOOKS:

[1] Computer Science: A Structured Programming Approach Using C, B. A. Forouzan and R. F. Gilberg, Third Edition, Cengage Learning.

[2] Data Communications and Networking - Behrouz A. Forouzan, Fifth Edition TMH, 2013.

REFERENCE BOOKS:

[1] The C Programming Language, B.W. Kernighan and Dennis M. Ritchie, Second Edition, Pearson education.

GENDER SENSITIZATION

(An Activity-based Course)

Course Code: 19MC0001

B.Tech. II YearIISem.	**L**	**T**	**P**	**C**
	2	**-**	**-**	**0**

Course Objectives:

- To develop students sensibility with regard to issues of gender in contemporaryIndia.
- To provide a critical perspective on the socialization of men andwomen.
- To introduce students to information about some key biological aspects ofgenders.
- To expose the students to debates on the politics and economics ofwork.
- To help students reflect critically on genderviolence.
- To expose students to more egalitarian interactions between men andwomen.

Course Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporaryIndia.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature andfilm.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counterit.
- Studentswillacquireinsightintothegendereddivisionoflabouranditsrelationtopolitics andeconomics.
- Men and women students and professionals will be better equipped to work and live together asequals.
- Students will develop a sense of appreciation of women in all walks oflife.
- Throughprovidingaccountsofstudiesandmovementsaswellasthenewlawsthatprovide protection and relief to women, the textbook will empower students to understand and respond to genderviolence.

UNIT - I

Understanding Gender: Introduction- Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction ofGender-Socialization: Making Women, Making Men - Preparing for Womanhood. Growing up Male.First lessons inCaste.

UNIT - II

Gender Roles and Relations: Two or Many? -Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex

Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender

Spectrum: Beyond the Binary.

UNIT - III

Gender and Labour: Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and unaccounted work-Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

UNIT - IV

Gender Based Violence: The Concept of Violence- Types of Gender-based Violence- Gender- based Violence from a Human Rights Perspective-Sexual Harassment: Say No! - Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "*Chupulu".* DomesticViolence:SpeakingOutIsHomeaSafePlace?- WhenWomenUnite[Film].Rebuilding Lives. Thinking about Sexual Violence Blaming the Victim-"I Fought for myLife…."

UNIT - V

GenderandCulture: GenderandFilm-GenderandElectronicMedia- GenderandAdvertisement- Gender and Popular Literature- Gender Development Issues- Gender Issues- Gender Sensitive Language-Gender and Popular Literature - Just Relationships: Being Together as Equals Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers.Rosa Parks- The BraveHeart.

TEXT BOOKS

[1] All the five Units in the Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, DuggiralaVasanta, Rama Melkote, VasudhaNagaraj, AsmaRasheed, GoguShyamala, DeepaSreenivas and Susie Tharu and published by Telugu Akademi, Hyderabad,Telangana State in the year 2015.

REFERENCE BOOKS

[1] Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books,2012

[2] AbdulaliSohaila. "I Fought For My Life…and Won."Availableonlineat: