Regulation: GNITC - R21

COURSE STRUCTURE
&
DETAILED SYLLABUS

for

II Year B.Tech. Degree Course

(Applicable for the batch admitted from 2021-22)

DEPARTMENT OF
COMPUTER SCIENCE & ENGINEERING

GURU NANAK INSTITUTIONS TECHNICAL CAMPUS
(AUTONOMOUS)
SCHOOL OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE STRUCTURE
(Applicable for the Batch admitted from 2021-22)

CSE II YEAR I SEM **III SEMESTER**

S. No.	Subject Code	Subject	L	T	P	Credits
1	21ES0EC24	Analog & Digital Electronics	3	0	0	3
2	21PC0CS01	Computer Organization & Architecture	3	0	0	3
3	21PC0CS02	Data Structures	3	0	0	3
4	21PC0CS03	Discrete Mathematics	3	0	0	3
5	21PC0CS04	Object Oriented Programming through JAVA	3	0	0	3
6	21ES0EC25	Analog & Digital Electronics Lab	0	0	3	1.5
7	21PC0CS05	Data Structures Lab	0	0	4	2
8	21PC0CS06	IT Workshop Lab	0	0	3	1.5
9	21PC0CS07	Object Oriented Programming through JAVA Lab	0	0	4	2
	5 Theory + 4 Lab	**Total Credits**	**15**	**00**	**14**	**22**

CSE II YEAR II SEM **IV SEMESTER**

S. No.	Subject Code	Subject	L	T	P	Credits
1	21SS0MB17	Organizational Behaviour	3	0	0	3
2	21PC0CS08	Design & Analysis of Algorithms	3	0	0	3
3	21PC0CS09	Data Base Management Systems	3	0	0	3
4	21PC0CS10	Operating Systems	3	0	0	3
5	21HS0EN04	Effective Technical Communication	3	0	0	3
6	21PC0CS11	Design & Analysis of Algorithms Lab	0	0	4	2
7	21PC0CS12	Data Base Management Systems Lab	0	0	3	1.5
8	21PC0CS13	Operating Systems Lab	0	0	3	1.5
9	21MC0EN02	Gender Sensitization Lab	0	0	2	0
	5 Theory + 3 Lab + 1 MC	**Total Credits**	**15**	**00**	**12**	**20**

II Year B.Tech. CSE & IT I-Sem

L	T	P	C
3	0	0	3

ANALOG & DIGITAL ELECTRONICS(21ES0EC24)
(Common to CSE & IT)

COURSE OBJECTIVES:

1. To give an understanding of various devices like Diodes, BJTs, FETs and types of amplifier circuits
2. To understand the design of digital circuits using combinational logic circuits and sequential logic circuits.

SYLLABUS:

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, breakdown mechanism in diodes, Tunnel diode, photo diode, LED. Diode Applications - clipping circuits, comparators, half wave rectifier, Full wave rectifier, rectifier with capacitor filter.

UNIT – II

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 – III

FETs and Digital Circuits

FETs: JFET, V-I characteristics, MOSFET, CS and CD amplifiers. Digital Circuits: Digital (binary) operations of a system, OR gate, AND gate, NOT, EXCLUSIVE OR gate, De Morgan Laws, NAND and NOR DTL gates, modified DTL gates, HTL and TTL gates, output stages, RTL and DCTL, CMOS, Comparison of logic families.

UNIT – IV

Combinational logic circuits

Basic Theorems and Properties of Boolean Algebra, Canonical and Standard Forms, Digital Logic Gates, The Map Method, Product-of-Sums Simplification, Don't-Care Conditions, NAND and NOR Implementation, Exclusive-OR Function, Binary Adder-Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers.

UNIT – V

Sequential logic circuits

Sequential Circuits, Storage Elements: Latches and flip flops, State Reduction and Assignment, Shift Registers, Ripple Counters, Synchronous Counters, Random-Access Memory, Read-Only Memory.

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, McGraw-Hill, 1994.

COURSE OUTCOMES:

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

CO1 : Know the diode characteristics and its applications.
CO2 : Understand the characteristics of BJT and amplifier circuits.
CO3 : Have an understanding of various logic families.
CO4 : Design and analyze combinational logic circuits
CO5 : Design and analyze sequential logic circuits

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II Year B. Tech. CSE I-Sem

L	T	P	C
3	0	0	3

COMPUTER ORGANIZATION & ARCHITECTURE (21PC0CS01)

PRE-REQUISITE:
1. A course on “Programming for Problem Solving”

CO-REQUISITE:
1. A course on “Analog & Digital Electronics”

COURSE OBJECTIVE:
This course is intended to pertain the knowledge of computer scienceand electronics engineering to computer hardware and assembly level programming

SYLLABUS:

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, Complete Computer Description.

UNIT – II
Micro Programmed Control: Control memory, Address sequencing, micro program example, design of control unit. Central Processing Unit: General Register Organization, STACK 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, Input –Output Processor (IOP).
Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory.

UNIT – V

Reduced Instruction Set of Computer: CISC Characteristics, RISC Characteristics.

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

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

TEXT BOOKS:

1. Computer System Architecture – M. Moris Mano, Third Edition, Pearson/PHI.
2. Computer Organization – Car Hamacher, ZvonksVranesic, SafeaZaky, Vth Edition, McGraw Hill.

REFERENCE BOOKS:

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI.
2. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition PHI/Pearson.

COURSE OUTCOMES:

By the end of the course, the students will be able to:

CO 1: Describe the basic structure and fundamentals of computer
CO 2: Discuss the RTL, Micro operations and micro programmed control
CO 3: Interpret the data and storage organization
CO 4: Model the Computer Architectures
CO 5: Write and examine the assembly language programs for various applications

II Year B.Tech. CSE I-Sem

L	T	P	C
3	0	0	3

DATA STRUCTURES (21PC0CS02)

PRE-REQUISITE:
1. A course on “Programming for Problem Solving”

CO-REQUISITE:
1. A course on “Discrete Mathematics”

COURSE OBJECTIVE:
This course provides a comprehensive study of abstract data types, basic data structures,solve the problems using different data structures and design techniques, compare their performance and tradeoffs

SYLLABUS:

UNIT - I
Introduction to Data Structures, abstract data types, Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, Stacks-Operations, array and linked representations of stacks, stack applications, Queues-operations, array and linked representations.

UNIT - II
Dictionaries: linear list representation, skip list representation, operations - insertion, deletion and searching.
Hash table representation: hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing.

UNIT - III
Search Trees: Binary Search Trees, Definition, Implementation, Operations-Searching, Insertion and Deletion, AVL Trees, Definition, Height of an AVL Tree, Operations – Insertion, Deletion and Searching, Red –Black, Splay Trees.

UNIT - IV
Graphs: Graph Implementation Methods. Graph Traversal Methods.
Sortings: Heap Sort, External Sorting- Model for external sorting, Merge Sort.

UNIT - V
Pattern matching and Tries: Pattern matching algorithms-Brute force, the Boyer – Moore algorithm, the Knuth-Morris-Pratt algorithm, Standard Tries, Compressed Tries, Suffix tries.

TEXT BOOKS:

1. Fundamentals of data structures in C, 2nd Edition, E.Horowitz, S.Sahni and Susan Anderson Freed, Universities Press.
2. Data structures using C – A.S.Tanenbaum, Y. Langsam, and M.J. Augenstein, PHI/pearson education.

REFERENCE BOOKS:

1. Data structures: A Pseudocode Approach with C, 2 nd edition, R.F.Gilberg and B.A.Forouzan, Cengage Learning.
2. Introduction to data structures in c, 1/e Ashok Kamthane.

COURSE OUTCOMES:

By the end of the course, students will be able to:

CO 1: Define and express algorithm correctness and time efficiency
CO 2: Identify appropriate data structures for solving computing problems in respective language
CO 3: Apply the data structure concepts for realistic problems using trees and graphs
CO 4: Solve problems independently and critical thinking
CO 5: Compare the various searching and sorting techniques along with their implementations

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B.Tech (CSE) II Year I – Sem

L	T	P	C
3	0	0	3

DISCRETE MATHEMATICS (21PC0CS03)

PRE-REQUISITE:
1. A course on “Mathematics-I”

CO-REQUISITES:
1. A course on “Analog & Digital Electronics”
2. A course on “Data Structures”

COURSE OBJECTIVE:
This course is intended to acquire the ability to work with concepts of discrete structures that includes areas such as functions, relations, sets, predicate logic, combinatorics and graph theory

SYLLABUS:

UNIT-I

Propositional Logic: Syntax, Semantics, Validity and Satisfiability, Basic Connectives and Truth Tables, Logical Equivalence: The Laws of Logic, Logical Implication, Disjunctive and Conjunctive NormalForm, Rules of Inference, The use of Quantifiers. **Proof Techniques:** Some Terminology, Proof Methods and Strategies, Forward Proof, Proof by Contradiction, Proof by Contraposition, Proof of Necessity andSufficiency.

UNIT-II

Sets, Relation and Function: Operations and Laws of Sets, Cartesian Products, Binary Relation, Partial Ordering Relation, Equivalence Relation, Image of a Set, Sum and Product of Functions, Bijective functions, Inverse and Composite Function, Size of a Set, Finite and infinite Sets, Countable and uncountable Sets, Cantor's diagonal argument and The Power Set theorem, Schroeder-Bernsteintheorem.

UNIT-III

Principles of Mathematical Induction: The Well-Ordering Principle, Recursive definition, The Division algorithm: Prime Numbers, The Greatest Common Divisor: Euclidean Algorithm, The Fundamental Theorem ofArithmetic.Basic counting techniques-inclusion and exclusion, pigeon-hole principle, permutation and Combination.

UNIT-IV

Algebraic Structures and Morphism: Algebraic Structures with one Binary Operation, Semi Groups, Monoids, Groups, Congruence Relation and Quotient Structures, Free and Cyclic Monoids and Groups, Permutation Groups,Substructures, Normal Subgroups, Algebraic Structures withtwo Binary Operation, Rings, Integral Domain and Fields. Boolean Algebra and Boolean Ring, Identities of Boolean Algebra, Duality, Representation of Boolean Function.

UNIT-V

Graphs and Trees: Graphs and their properties, Degree, Connectivity, Path, Cycle, Sub Graph, Isomorphism, Eulerian and Hamiltonian Walks, Graph Colouring, Colouring maps and Planar Graphs, Colouring Vertices, Colouring Edges, List Colouring, Perfect Graph, definition properties and Example, rooted trees, trees and sorting, weighted trees and prefix codes, Bi-connected component and Articulation Points, Shortestdistances.

TEXT BOOKS:

1. J.P. Tremblay and R. Manohar, Discrete Mathematical Structure and It's Application to Computer Science, TataMcgraw-Hill
2. C L Liu and D P Mohapatra, Elements of Discrete Mathematics A Computer Oriented Approach, 3rd Edition by, Tata McGraw –Hill
3. Abraham Kandel, Joe L. Mott, Theodore P. Baker, Discrete Mathematics for Computer Scientists & Mathematicians, 2nd ed. , Pearson Education

REFERENCE BOOKS:

1. Kenneth H. Rosen, Discrete Mathematics and its Applications, Tata McGraw –Hill
2. Susanna S. Epp, Discrete Mathematics with Applications,4th edition, Wadsworth Publishing Co.Inc.
3. Norman L. Biggs, Discrete Mathematics, 2nd Edition, Oxford University Press.
4. Schaum's Outlines Series, Seymour Lipschutz, Marc Lipson, Discrete Mathematics, TataMcGraw – Hill
5. Thomas Koshy, Discrete Mathematics with Applications, Elsevier.

COURSE OUTCOMES:

By the end of the course, students will be able to:

CO 1: Identify the validity of argument by using propositional and predicate calculus
CO 2: Illustrate the basic terminology of relations, functions and lattices
CO 3: Relate the basic counting techniques to solve the combinatorial problems
CO 4: Produce the recurrence relations through recursively defined structures
CO 5: Apply the basic concepts of graph theory to related theoretical problems

B.Tech (CSE) II Year I – Sem

L	T	P	C
3	0	0	3

OBJECT ORIENTED PROGRAMMING THROUGH JAVA (21PC0CS04)

PRE-REQUISITE:
1. A course on “Programming for problem solving”

COURSE OBJECTIVE:
The aim of this course is to comprehend object oriented programming concepts and apply them in problem solving

SYLLABUS:

UNIT – I
OOP concepts: Classes and objects, data abstraction, encapsulation, inheritance, benefits of inheritance, polymorphism, procedural and object oriented programming paradigm; Java programming: History of java, comments data types, variables, constants, scope and life time of variables, operators, operator hierarchy, expressions, type conversion and casting, enumerated types, control flow statements, jump statements, simple java stand alone programs, arrays, console input and output, formatting output, constructors, methods, parameter passing, static fields and methods, access control, this reference, overloading methods and constructors, recursion, garbage collection, exploring string class.

UNIT – II
Inheritance: Inheritance hierarchies, super and subclasses, member access rules, super keyword, preventing inheritance: final classes and methods, the object class and its methods; Polymorphism: Dynamic binding, method overriding, abstract classes and methods; Interface: Interfaces vs Abstract classes, defining an interface, implement interfaces, accessing implementations through interface references, extending interface; Packages: Defining, creating and accessing a package, understanding CLASSPATH, importing packages.

UNIT – III
Exception Handling: Benefits of exception handling, the classification of exceptions, exception hierarchy, checked and unchecked exceptions, usage of try, catch, throw, throws and finally, re-throwing exceptions, exception specification, built in exceptions, creating own exception sub classes. Multithreading: Differences between multiple processes and multiple threads, thread states, creating threads, interrupting threads, thread priorities, synchronizing threads, inter thread communication.
UNIT – IV
Files: Streams, byte streams, character stream, text input/output, binary input/output, random access file operations, file management using file class; Connecting to Database: Connecting to a database, querying a database and processing the results, updating data with JDBC.

UNIT – V

GUI programming with Java: The AWT class hierarchy, introduction to swing, swing Vs AWT, hierarchy for swing components, containers, JFrame, JApplet, JDialog, JPanel; Overview of some swing components: JButton, JLabel, JTextField, JTextArea, simple applications; Layout management: Layout manager types: Border, grid and flow; Applets: Inheritance hierarchy for applets, differences between applets and applications, life cycle of an applet, passing parameters to applets.

TEXT BOOKS:

1. Herbert Schildt, Dale Skrien, "Java Fundamentals: A Comprehensive Introduction", McGraw Hill, 1st Edition, 2013.
2. Herbert Schildt, "Java the Complete Reference", McGraw Hill, Osborne, 8th Edition, 2011.
3. T. Budd, "Understanding Object Oriented Programming with Java", Pearson Education, Updated Edition (New Java 2 Coverage), 1999.

REFERENCE BOOKS:

1. P.J. Deitel, H. M. Deitel, "Java: How to Program", Prentice Hall, 6th Edition, 2005.
2. P. Radha Krishna, "Object Oriented Programming through Java", Universities Press, CRC Press, 2007.
3. Bruce Eckel, "Thinking in Java", Prentice Hall, 4th Edition, 2006.
4. Sachin Malhotra, Saurabh Chaudhary, "Programming in Java", Oxford University Press, 2nd Edition, 2014.

COURSE OUTCOMES:

By the end of the course, students will be able to:

CO 1: Describe the concepts of OOP and basics of java programming
CO 2: Express the programming skills in problem solving
CO 3: Solve the exceptions and handle the exceptions in programming
CO 4: Outline the GUI based applications
CO 5: Extend their knowledge of java programming further on their own

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II Year B.Tech. CSE I-Sem

L	T	P	C
0	0	3	1.5

ANALOG & DIGITAL ELECTRONICS LAB (21ES0EC25)
(Common to CSE & IT)

CO-REQUISITE:
1. A course on “Analog & Digital Electronics”

COURSE OBJECTIVE:
This lab course is intended to understand the design of digital circuits using combinational logic circuits and sequential logic circuits

SYLLABUS:
List of Experiments

1. Full Wave Rectifier with filters
2. Bridge Rectifier with filter
3. Common Emitter Amplifier Characteristics
4. Common Base Amplifier Characteristics
5. Common Source amplifier Characteristics
6. Measurement of h-parameters of transistor in CE configurations
7. Input and Output characteristics of FET in CS configuration
8. Design and realization logic gates using universal gates
9. Design a 4 – bit Adder
10. Design a 4 – bit Subtractor
11. Design and realization a Synchronous and Asynchronous counters using flip-flops
12. Realization of logic gates using DTL, TTL, ECL, etc.,

NOTE: Minimum of 10 experiments to be conducted.

REFERENCE 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.

COURSE OUTCOMES:
Upon successful completion of this Lab, students will be able to:
CO 1 :Design and analyze combinational logic circuits
CO 2 :Design and analyze sequential logic circuits

II Year B.Tech. CSE I-Sem

L	T	P	C
0	0	4	2

DATA STRUCTURES LAB (21PC0CS05)

CO-REQUISITE:

1. A course on “Data Structures”

COURSE OBJECTIVE:

This lab course is intended to write and execute programs in C to solve problems using data structures such as linked lists, stacks, queues, trees, graphs, hash tables search trees, pattern matching techniques and implement various searching and sorting methods

SOFTWARE REQUIREMENTS:

Turbo C / Linux

SYLLABUS:

LIST OF PROGRAMS

1. Write a program that uses functions to perform the following operations on singly linked list.
   i) Creation ii) Insertion iii) Deletion iv) Traversal
2. Write a program that uses functions to perform the following operations on doubly linked list.
   i) Creation ii) Insertion iii) Deletion iv) Traversal
3. Write a program that uses functions to perform the following operations on circular linked list.
   i) Creation ii) Insertion iii) Deletion iv) Traversal
4. Write a program that implement stack (its operations) using
   i) Arrays ii) Pointers
5. Write a program that implement Queue (its operations) using
   i) Arrays ii) Pointers
6. Write a program that implements the following sorting methods to sort a given list of integers in ascending order
   i) Bubble sort ii) Merge sort iii) Heap sort
7. Write a program that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:
   i) Linear search ii) Binary search
8. Write a program to implement binary search tree
9. Write a program to implement the tree traversal methods
10. Write a program to implement AVL Tree
11. Write a program to implement the graph traversal methods
12. Write a program to implement pattern matching algorithms

TEXT BOOKS:

1. Fundamentals of data structures in C, 2 nd edition, E.Horowitz, S.Sahni and Susan Anderson Freed, Universities Press.
2. Data structures using c – A.S.Tanenbaum, Y. Langsam, and M.J. Augenstein, PHI/pearson education.

REFERENCE BOOKS:

1. Data structures: A Pseudocode Approach with C, 2 nd edition, R.F.Gilberg And B.A.Forouzan, Cengage Learning.
2. Introduction to data structures in c, 1/e Ashok Kamthane.

COURSE OUTCOMES:

Upon successful completion of this Lab, students will be able to:

CO 1: Identify the appropriate data structure for given problem
CO 2: Analyze the time and space complexity of algorithm or program
CO 3: Effectively use compilers including library functions, debuggers and trouble shooting
CO 4: Implement the various searching and sorting techniques
CO 5: Compare and contrast the abstract data types and pattern matching algorithms

B.Tech (CSE) II Year I – Sem

L	T	P	C
0	0	3	1.5

IT WORKSHOP LAB (21PC0CS06)

CO-REQUISITE:

1. A course on “Computer Organization & Architecture”

COURSE OBJECTIVE:

This lab course is introduced to make the students learn about PC Hardware, install operating systems, Hardware and Software Troubleshooting, student how to use Internet and World Wide Web and to use the productivity tools

HARDWARE / SOFTWARE REQUIREMENTS:

A typical PC / MS Office / LaTeX

SYLLABUS:

LIST OF TASKS:

PC Hardware

Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

Task 3: Hardware Troubleshooting: Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva

Task 4: Software Troubleshooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

Internet & World Wide Web

Task 5: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN. Customize browsers.

Task 6: Develop your home page using HTML Consisting of your photo, name, address and education details as a table and your skill set as a list.

Productivity Tools

LaTeX and Word

Task 7: Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Task 8 : Creating a Newsletter : Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word.

Excel

Task 9: Excel Orientation: The mentor needs to tell the importance of MS office 2007/ equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the two tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources. Creating a Scheduler - Features to be covered:- Gridlines, Format Cells, Summation, auto fill, Formatting Text, calculating GPA

Power Point

Task 10: Students making their presentations interactive. Topic covered during this week includes: Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts

TEXT BOOKS:

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
2. Latex Companion –Leslie Lamport, PHI/Pearson.

REFERENCE BOOKS:

1 .Introduction to Computers, Peter Norton, 6/e Mc Graw Hill Publishers.
2. Upgrading and Repairing, PC's, 18th e, Scott Muller QUE, Pearson Education.
3. Comdex Information Technology course tool kit VikasGupt, WILEY Dreamtech.
4. IT Essentials PC Hardware and Softwre Companion Guide, Third Edition by David Anfinsonand ken Quamme. –CISCO Press, Pearson Education.
5. PC Hardware and A+ Handbook—Kate J. Chase PHI (Microsoft)

COURSE OUTCOMES:

Upon successful completion of this Lab, students will be able to:

CO 1: Attain knowledge for computer assembling and software installation
CO 2: Analyze the hardware and software trouble shooting problems
CO 3: Effectively utilize internet and work on world wide web
CO 4: Apply the tools for personal and professional utilities
CO 5: Create the documents, presentations, and spreadsheets

B.Tech (CSE) II Year I – Sem

L	T	P	C
0	0	4	2

OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB (21PC0CS07)

CO-REQUISITE:
1. A course on “Object Oriented Programming”

COURSE OBJECTIVE:
This lab course is introduced to create the Graphical User Interface using Applets, AWT Components & Swing Components

SOFTWARE REQUIREMENTS:
Java / Eclipse / Netbeans

SYLLABUS:
LIST OF PROGRAMS

1. Write a Java 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. [Use JOption Pane –Input dialog, Message dialog]
2. Write a Java program to create an abstract class named Shape that contains two integers and an empty method named print Area(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape.
3. 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.
4. Write a Java program that connects to a database using JDBC and does add, delete, modify and retrieve operations.
5. 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 selected color. Initially, there is no message shown.
6. 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

7. a) Develop an applet in Java that displays a simple message.
b)Develop an applet in Java that receives an integer in one text field, and computes its factorial value and returns it in another text field, when the button named “Compute” is clicked.
8. Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a Java program to display the table using Labels in Grid Layout.
9. 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).
10. Implement the above program with the database instead of a text file.
11. Write a Java program that prints the meta-data of a given table.

TEXT BOOK:

1. Java Fundamentals – A comprehensive Introduction, Herbert Schildt and Dale Skrien, TMH.

REFERENCE BOOKS:

1. Java for Programmers, P.J.Deitel and H.M.Deitel, Pearson education (OR) Java: How to Program, P.J.Deitel and H.M.Deitel, PHI.
2. Object Oriented Programming through Java, P. Radha Krishna, University Press.

COURSE OUTCOMES:

Upon successful completion of this Lab, students will be able to:

CO 1: Work with java compiler and eclipse platform to write and execute java programs
CO 2: Apply object oriented features in java programming for problem solving
CO 3: Access data from database with java programs
CO 4: Describe exception handling mechanism
CO 5: Develop applications using Console I/O and File I/O,GUI applications

B.Tech (CSE) II Year II – Sem

L	T	P	C
3	0	0	3

ORGANIZATIONAL BEHAVIOUR(21SS0MB17)

COURSE OBJECTIVE:

To understand the fundamentals of Behavioural aspects of individual and groups in an organization

SYLLABUS:

UNIT – I

Introduction to Organization Behaviour: Introduction to Organization, Organization and managers, Manager roles and skills, Behaviour at work, Introduction to Organization Behaviour, Major Behavioural science disciplines contributing to OB, Challenges and Opportunities managers have in applying OB concepts, OB model (Including motivation Models) and levels of OB model

UNIT – II

Individual Behaviour: Introduction to Individual Behaviour, values, attitudes, Job satisfaction, personality, perception and individual decision making, learning, motivation at work, managing emotions and stress (Meaning-Definition Stress and job performance relationship Approaches to stress management (coping with stress)

UNIT – III

Interpersonal Behaviour: Interpersonal Behaviour, Johari window, Transactional Analysis-ego states, Types of transactions, Life positions, applications of T.A, managerial interpersonal styles

UNIT – IV

Group behaviour: Introduction to group behaviour, foundations of group Behaviour, concept of group and group dynamics, types of groups, formal and informal groups, Theories of group formation, group norms, group cohesiveness, group decision making, intergroup Behaviour, concept of group vs team, types of teams, building and managing effective teams, leadership theories and styles, power and politics, conflict and negotiation

UNIT – V

Organizational behaviour: Foundations of organization structure, Organization design, Organization culture, Organization change, managing across cultures, human resource management policies and practices, diversity at work.

TEXT BOOKS:

1) S.P.Robbins /Judge, T.A/Sanghi,S, Organizational Behaviour, Pearson publication

2) Aswathappa,K., Organizational Behaviour-Text and problem, Himalaya publication

3) Pardeshi,P.C., Organizational Behaviour& Principles & practice of Management, Nirali publication

COURSE OUTCOMES:

Students will be able to understand

CO 1: Organization and managers roles

CO 2: understanding the individual behaviour

CO 3: Interpersonal Behaviour

CO 4: group behaviour

CO 5: organization policies and practices

B.Tech (CSE) II Year II – Sem

L	T	P	C
3	0	0	3

DESIGN & ANALYSIS OF ALGORITHMS (21PC0CS08)

PRE-REQUISITES:
1. A course on “Programming for problem solving”
2. A course on “Data Structures”

COURSE OBJECTIVE:
The objective of the course is to solve problems using algorithm design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch and bound

SYLLABUS:

UNIT – I
Introduction: Characteristics of algorithm. Analysis of algorithm: Asymptotic analysis of complexity bounds – best, average and worst-case Behaviour; Performance measurements of Algorithm, Time and space trade-offs, Analysis of recursive algorithms through recurrence relations: Substitution method, Recursion tree method andMasters’ theorem.

UNIT – II
Fundamental Algorithmic Strategies: Brute-Force, Greedy, Dynamic Programming, Branch- and-Bound and Backtracking methodologies for the design of algorithms; Illustrations of these techniques for Problem-Solving , Bin Packing, Knap Sack TSP. Heuristics – characteristics and their applicationdomains.

UNIT – III
Graph and Tree Algorithms: Traversal algorithms: Depth First Search (DFS) and Breadth First Search (BFS); Shortest path algorithms, Transitive closure, Minimum Spanning Tree, Topological sorting, Network FlowAlgorithm.

UNIT – IV
Tractable and Intractable Problems: Computability of Algorithms, Computability classes – P, NP, NP-complete and NP-hard. Cook’s theorem, Standard NP-complete problems and Reductiontechniques.

UNIT – V
AdvancedTopics: Approximation algorithms, Randomized algorithms, Class of problems beyond NP – PSPACE

TEXT BOOKS:
1. Introduction to Algorithms, 4TH Edition, Thomas H Cormen, Charles E Lieserson, Ronald L Rivest and Clifford Stein, MITPress/McGraw-Hill.
2. Fundamentals of Algorithms – E. Horowitz etal.

REFERENCE BOOKS:

1. Algorithm Design, 1ST Edition, Jon Kleinberg and ÉvaTardos,Pearson.
2. Algorithm Design: Foundations, Analysis, and Internet Examples, Second Edition, Michael T Goodrich and Roberto Tamassia,Wiley.
3. Algorithms – A Creative Approach, 3rd Edition, UdiManber, Addison-Wesley, Reading,MA.

COURSE OUTCOMES:

By the end of the course, students will be able to:

CO 1: Describe algorithms dealing with various techniques along with the efficiency of algorithms

CO 2: Select the data structures and algorithm design methods that impacts the performance of programs

CO 3: Identify the various searching and graph traversal techniques

CO 4: Distinguish designing methods for development of algorithms to realistic problems, such as divide and conquer, greedy and etc.

CO 5: Estimate the performance of algorithms

B.Tech (CSE) II Year II – Sem

L	T	P	C
3	0	0	3

DATA BASE MANAGEMENT SYSTEMS (21PC0CS09)

PRE-REQUISITE:
1. A course on “Data Structures”

COURSE OBJECTIVE:
This course is introduced to describe the basic concepts of SQL, build queries using SQL commands and generate applications of database systems

SYLLABUS:

UNIT – I
Database system architecture: Data Abstraction, Data Independence, Data Definition Language (DDL), Data Manipulation Language (DML).Data models: Entity-relationship model, network model, relational and object oriented data models, integrity constraints, data manipulation operations.

UNIT – II
Relational query languages: Relational algebra, Tuple and domain relational calculus, SQL3, DDL and DML constructs, Open source and Commercial DBMS - MYSQL, ORACLE, DB2, SQL server. Relational database design: Domain and data dependency, Armstrong’s axioms, Normal forms, Dependency preservation, Lossless design. Query processing and optimization: Evaluation of relational algebra expressions, Query equivalence, Join strategies, Query optimization algorithms.

UNIT – III
Storage strategies: Indices, B-trees, hashing. Transaction processing: Concurrency control, ACID property, Serializability of scheduling, Locking and timestamp based schedulers, Multi-version and optimistic Concurrency Control schemes, Database recovery.

UNIT – IV
Database security: Authentication, Authorization and access control, DAC, MAC and RBAC models, Intrusion detection, SQL injection.

UNIT – V
Advanced topics: Object oriented and object relational databases, Logical databases, Web databases, Distributed databases, Data warehousing and data mining.

TEXT BOOK:
1. “Database System Concepts” , 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill.

REFERENCE BOOKS:

1. “Principles of Database and Knowledge – Base Systems”, Vol 1 by J. D. Ullman, Computer Science Press.
2. “Fundamentals of Database Systems” , 5th Edition by R. Elmasri and S. Navathe, Pearson Education
3. “Foundations of Databases”, Reprint by Serge Abiteboul, Richard Hull, Victor Vianu, Addison-Wesley

COURSE OUTCOMES:

By the end of the course, students will be able to:

CO 1: Describe the basic fundamentals of DBMS, database design and normal forms
CO 2: Identify the appropriate SQL commands for retrieval and management of data
CO 3: Analyze the schema refinement and normal forms
CO 4: Identify data models for relevant problems
CO 5: Model database storage structures and access techniques

B.Tech (CSE) II Year II – Sem

L	T	P	C
3	0	0	3

OPERATING SYSTEMS (21PC0CS10)

PRE-REQUISITES:
1. A course on "Programming for problem solving"
2. A course on "Computer Organization & Architecture"

COURSE OBJECTIVE:
The purpose of this course is to realize the concepts of input- output, storage and file management in Unix/Linux

SYLLABUS:

UNIT – I

Introduction: Concept of Operating Systems, Generations of Operating systems, Types of Operating Systems, OS Services, System Calls, Structure of an OS - Layered, Monolithic, Microkernel Operating Systems, Concept of Virtual Machine. Case study on UNIX and WINDOWS OperatingSystem.

UNIT – II

Processes: Definition, Process Relationship, Different states of a Process, Process State transitions, Process Control Block (PCB), Context switching

Thread: Definition, Various states, Benefits of threads, Types of threads, Concept of multithreads,

Process Scheduling: Foundation and Scheduling objectives, Types of Schedulers, Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time; Scheduling algorithms: Pre-emptive and Non pre-emptive, FCFS, SJF, RR; Multiprocessor scheduling: Real Time scheduling: RM and EDF.

UNIT – III

Inter-process Communication: Critical Section, Race Conditions, Mutual Exclusion, Hardware Solution, Strict Alternation, Peterson's Solution, The Producer/Consumer Problem, Semaphores, Event Counters, Monitors, Message Passing, Classical IPC Problems: Reader's & Writer Problem, Dinning Philosopher Problemetc.

Deadlocks: Definition, Necessary and sufficient conditions for Deadlock, Deadlock Prevention, Deadlock Avoidance: Banker's algorithm, Deadlock detection andRecovery.

UNIT – IV

Memory Management: Basic concept, Logical and Physical address map, Memory allocation: Contiguous Memoryallocation– Fixed and variable partition– Internal and External fragmentation and Compaction; Paging: Principle of operation – Page allocation – Hardware support for paging, Protection and sharing, Disadvantages ofpaging.

Virtual Memory: Basics of Virtual Memory – Hardware and control structures – Locality of reference, Page fault , Working Set , Dirty page/Dirty bit – Demand paging, Page Replacement algorithms: Optimal, First in First Out (FIFO), Second Chance (SC), Not recently used (NRU) and Least Recently used(LRU).

UNIT – V

I/O Hardware: I/O devices, Device controllers, Direct memory access Principles of I/O Software: Goals of Interrupt handlers, Device drivers, Device independent I/O software, Secondary-Storage Structure: Disk structure, Disk scheduling algorithms.

File Management: Concept of File, Access methods, File types, File operation, Directory structure, File System structure, Allocation methods (contiguous, linked, indexed), Free-space management (bit vector, linked list, grouping), directory implementation (linear list, hash table), efficiency andperformance.

Disk Management: Disk structure, Disk scheduling - FCFS, SSTF, SCAN, C-SCAN, Disk reliability, Disk formatting, Boot-block, Bad blocks

TEXT BOOKS:

1. Operating System Concepts Essentials, 9th Edition by AviSilberschatz, Peter Galvin, Greg Gagne, Wiley Asia StudentEdition.
2. Operating Systems: Internals and Design Principles, 5th Edition, William Stallings, Prentice Hall ofIndia.

REFERENCEBOOKS:

1. Operating System: A Design-oriented Approach, 1st Edition by Charles Crowley, Irwin Publishing
2. Operating Systems: A Modern Perspective, 2nd Edition by Gary J. Nutt,Addison-Wesley
3. Design of the Unix Operating Systems, 8th Edition by Maurice Bach, Prentice-Hall ofIndia
4. Understanding the Linux Kernel, 3rd Edition, Daniel P. Bovet, Marco Cesati, O'Reilly andAssociates

COURSE OUTCOMES:

By the end of the course, students will be able to:

CO 1: Describe the synchronous and asynchronous communication mechanisms in their respective operating systems

CO 2: Discuss the inter process communication in Unix/Linux

CO 3: Apply optimization techniques for the improvement of system performance

CO 4: Analyze turnaround time, waiting time, response time and throughput

CO 5: Compare the different operating system functionalities

B.Tech (CSE) II Year II – Sem

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3	0	0	3

EFFECTIVE TECHNICAL COMMUNICATION (21HS0EN04)

PRE-REQUISITES:

1. A course on “English”
2. A course on “English language communication skills lab”

COURSE OBJECTIVE:

The main objective of this course is to impart advance technical communication skills to students in terms of research, writing, editing, and design principles of technical and professional communication. Further, the course prepares students to design effective technical documentation such as Planning, drafting, revising, editing, researching, analyzing, synthesizing and applying information to create technical reports and professional documents through individual and collaborative writing to articulate complex ideas appropriate for target audiences. Moreover, the course inculcates business and professional ethics.

SYLLABUS:

UNIT – I

Information Design and Development- Different kinds of technical documents,Information development life cycle, Organization structures, factors affecting information and document design.

UNIT – II

Technical Writing, Grammar and Editing- Technical writing process, Writing drafts and revising, technical writing style and language.editing strategies to achieve appropriate technical style. Basics of grammar, Introduction to advanced technical communication.

UNIT – III

Self Development and Assessment-Self assessment, Awareness, Perception and Attitudes, Values and belief, Personal goal setting, career planning, Self-esteem.Managing Time; Personal memory, Rapid reading, Taking notes; Complex problem solving; Creativity.

UNIT – IV

Communication and Technical Writing- Public speaking, Oral presentation, Graphic presentation, Presentation aids,Group discussion, Interviews, Personality Development. Writing reports, project proposals, technical articles, manuals, official notes, business letters, memos, minutes of meetings, event report.

UNIT – V

Ethics- Business ethics, Etiquettes in social and office settings, Email etiquettes, Telephone Etiquettes, Engineering ethics, Role and responsibility of engineer, Work culture in jobs**.**

REFERENCEBOOKS:

1. David F. Beer, David McCurry, Guide to writing as an Engineer, John Willey, New York, 2004
2. Diane Hacker, Pocket Style Manual, Bedford Publication, New York, 2003. (ISBN 0312406843)
3. Shiv Khera, You Can Win, Macmillan Books, New York, 2003
4. Raman Sharma, Technical Communications, Oxford Publication, London, 2004.
5. Dale Jungk, Applied Writing for Technicians, McGraw Hill, New York, 2004. (ISBN: 07828357-4)
6. Sharma, R, Mohan, K, Business Correspondence and Report Writing, TMH New Delhi 2002.
7. Xebec, Presentation Book, TMH New Delhi, 2000. (ISBN 0402213)

COURSE OUTCOMES:

By the end of the course, students will be able to:

CO 1: Understand the ethical, international, social, and professional constraints of audience, style, and content for writing situations and communicate effectively
a) among managers or co-workers and colleagues of an organization
b) between organizations, or between an organization and the public.

CO 2: Understand professional writing by studying management communication contexts and genres, researching contemporary business topics, analyzing quantifiable data discovered by researching, and constructing finished professional workplace documents.

CO 3: Practice the unique qualities of professional rhetoric and writing style, such as sentence conciseness, clarity, accuracy, honesty, avoiding wordiness or ambiguity, using direct order organization, readability, coherence and transitional devices and to present technical material orally with confidence and poise.

CO 4: Develop employability skills like time management, values and beliefs, self-esteem, perception and attitude, problem-solving skills and creativity.

B.Tech (CSE) II Year II – Sem

L	T	P	C
0	0	4	2

DESIGN & ANALYSIS OF ALGORITHMS LAB (21PC0CS11)

CO-REQUISITE:
1. A course on "Design & Analysis of Algorithms"

COURSE OBJECTIVE:
This lab course is introduced to write and execute programs in order to solve problems using algorithm design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch and bound

SOFTWARE REQUIREMENTS:
Turbo C / Linux

SYLLABUS:

LIST OF PROGRAMS

1. Write a program to implement and analyze worst case running times based on asymptotic analysis.
2. Write a program to implement to sort a given set of elements using randomized algorithmsand determine the expected running time and probabilityoferror
3. Write a program to implement greedy algorithm for job sequence with dead lines
4. Write a program to implement divide-and–conquer for sorting of N-numbers.
5. Write a program to implement 0/1 knapsack problem using Dynamic programming
6. Write a program to implement to find minimum cost spanning tree using DFS and BFS
7. Write a program to obtain the Topological ordering of vertices in a given digraph.
8. Write a program to compute the transitive closure of a given directed graph using Warshall's algorithm.
9. Write a program for a given vertex in a weighted connected graph, find shortest paths to other vertices using Dijkstra's algorithm.
10. Write a program to implement any scheme to find the optimal solution for the Traveling Sales person problem and then solve the same problem instance using any approximation algorithm and determine the error in the approximation.
11. Write a program to implement N Queen's problem using back tracking.
12. Write a program to implement N Queen's problem using branch and bound.

TEXT BOOKS:

1. Introduction to Algorithms, 4TH Edition, Thomas H Cormen, Charles E Lieserson, Ronald L Rivest and Clifford Stein, MITPress/McGraw-Hill.
2. Fundamentals of Algorithms – E. Horowitz etal.

REFERENCE BOOKS:

1. Algorithm Design, 1ST Edition, Jon Kleinberg and ÉvaTardos,Pearson.
2. Algorithm Design: Foundations, Analysis, and Internet Examples, Second Edition, Michael T Goodrich and Roberto Tamassia,Wiley.
3. Algorithms – A Creative Approach, 3rd Edition, UdiManber, Addison- Wesley, Reading,MA.

COURSE OUTCOMES:
Upon successful completion of this Lab, students will be able to:

CO 1: Describe time complexities of various algorithms based on asymptotic analysis
CO 2: Work with randomized algorithms
CO 3: Develop the feasible and optimal solutions by using Greedy and dynamic programming
CO 4: Implement the various searching and graph traversal techniques
CO 5: Find solutions for the realistic problems using backtracking & branch and bound

B.Tech (CSE) II Year II – Sem

L	T	P	C
0	0	3	1.5

DATA BASE MANAGEMENT SYSTEMS LAB (21PC0CS12)

CO-REQUISITE:
1. A course on "Data Base Management Systems"

COURSE OBJECTIVE:
This lab course is intended to describe the SQL basics for data definition, data manipulation and introduce ER data model, database design and normalization

SOFTWARE REQUIREMENTS:
Oracle / MySql

SYLLABUS:
LIST OF TASKS
1. Concept design with E-R Model
2. Relational Model
3. Normalization
4. Practicing DDL commands
5. Practicing DML commands
6. Querying (using ANY, ALL, IN, Exists, NOT EXISTS, UNION, INTERSECT, Constraints etc.)
7. Queries using Aggregate functions, GROUP BY, HAVING and Creation and dropping of Views.
8. Triggers (Creation of insert trigger, delete trigger, update trigger)
9. Procedures
10. Usage of Cursors

TEXT BOOKS:
1. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill, 3rd Edition
2. Database System Concepts, Silberschatz, Korth, Mc Graw hill, 5th Edition.

REFERENCE BOOKS:
1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, ElmasriNavrate Pearson Education
3. Introduction to Database Systems, C.J.Date Pearson Education
4. Oracle for Professionals, The X Team, S.Shah and V. Shah, SPD.
5. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL,Shah,PHI.
6. Fundamentals of Database Management Systems, M. L. Gillenson, Wiley Student Edition.

COURSE OUTCOMES:
Upon successful completion of this Lab, students will be able to:
CO 1: Define database schema for a given application
CO 2: Discuss skills in using SQL commands for data definition and datamanipulation
CO 3: Prepare solutions for database applications using procedures, cursors and triggers
CO 4: Apply normalization techniques for the development of application software to realistic problems
CO 5: Build GUI applications based on end-user requirements

B.Tech (CSE) II Year II – Sem

L	T	P	C
0	0	3	1.5

OPERATING SYSTEMS LAB (21PC0CS13)

CO-REQUISITE:

1. A course on “Operating Systems”

COURSE OBJECTIVE:

This lab course is intended to perform different functionalities in Operating system Unix/Linux using commands

SOFTWARE REQUIREMENTS:

Turbo C / Unix / Linux

SYLLABUS:

LIST OF PROGRAMS

1. Practice the UNIX/LINUX System calls
2. Write a program to implement following process scheduling algorithms for a given specificationof CPU utilization, Throughput, Turnaround Time, Waiting Time, ResponseTime.
   i. First Come First Serve
   ii. Shortest Job First
   iii. Priority
   iv. Round Robin
3. Write a program to illustrate the following IPC mechanisms:
   i. Pipes
   ii. FIFOs
   iii. Message Queues
   iv. Shared Memory
4. Write a program to simulate Bankers Algorithm for Deadlock Avoidance and Prevention
5. Write a program to simulate the following memory management techniques:
   i. Variable Memory technique
   ii. Fixed Memory Technique
   iii. Paging
   iv. Segmentation
6. Write programs using the I/O system calls of UNIX/LINUX operating system:
   (open, read, write, close, fcntl, seek, stat, opendir, readdir)
7. Write a programs to simulate the following file organization Techniques:
   i. Single level
   ii. Two level
   iii. Hierarchical
   iv. DAG
8. Write a programs to simulate the following file allocation strategies:
   i. Sequential
   ii. Linked
   iii. Indexed

9. Write a programs to simulate the following Page Replacement Techniques:
    i. FIFO
    ii. LRU
    iii. Optimal
10. Write a program to simulate disk scheduling algorithms.

TEXT BOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
2. Advanced programming in the Unix environment, W.R.Stevens, Pearson education.

REFERENCE BOOKS:

1. Operating Systems – Internals and Design Principles Stallings, Fifth Edition–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. / Pearson Education
5. Unix Internals The New Frontiers, U.Vahalia, Pearson Education

COURSE OUTCOMES:

Upon successful completion of this Lab, students will be able to:

CO 1: Describe the operating systems concepts in Unix/Linux
CO 2: Illustrate various concepts in operating systems through implementation
CO 3: Solve the real-time problems like deadlock by providing suitable solutions
CO 4: Analyze the different operating system functionalities
CO 5: Simulate the page replacement algorithms

B.Tech (CSE) II Year II – Sem

L	T	P	C
0	0	2	0

GENDER SENSITIZATION LAB (21MC0EN02)
(An Activity-based Course)

Objectives of the Course:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reject critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Unit-I: Understanding Gender

Gender: Why Should We Study It? (*Towards a World of Equals*: Unit -1)

Socialization: Making Women, Making Men (*Towards a World of Equals*: Unit -2)

Introduction.Preparing for Womanhood.Growing up Male.First lessons in Caste.Different Masculinities.

Unit – II: Gender and Biology

Missing Women:Sex Selection and Its Consequences(*Towards a World of Equals*:Unit -4)

Declining Sex Ratio.Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals*: Unit -10)

Two or Many?Struggles with Discrimination.

Unit – III: Gender and Labour

Housework: the Invisible Labour (*Towards a World of Equals*: Unit -3)

"My Mother doesn't Work." "Share the Load."

Women's Work: Its Politics and Economics (*Towards a World of Equals*: Unit -7)

Fact and Fiction.Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

Unit – IV: Issues of Violence

Sexual Harassment: Say No! (*Towards a World of Equals*: Unit -6)

Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "*Chupulu".*

Domestic Violence: Speaking Out (*Towards a World of Equals*: Unit -8)

Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice.

Thinking about Sexual Violence (*Towards a World of Equals*: Unit -11)

Blaming the Victim-"I Fought for my Life…." - Additional Reading: The Caste Face of Violence.

Unit – V: Gender : Co-Existence

Just Relationships: Being Together as Equals (*Towards a World of Equals*: Unit -12)

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers.

Additional Reading: Rosa Parks-The Brave Heart.

Essential Reading: All the Units in the Textbook, "*Towards a World of Equals: A Bilingual Textbook on Gender"* written by A.Suneetha, Uma Bhrugubanda, DuggiralaVasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, GoguShyamala, Deepa Sreenivas and Susie Tharu.

Note: Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

Reference Books:

1. Sen, Amartya. "More than One Million Women are Missing." New York Review of Books 37.20 (20 December 1990). Print. '*We Were Making History…' Life Stories of Women in the Telangana People's Struggle*. New Delhi: Kali for Women, 1989.
2. TriptiLahiri. "By the Numbers: Where Indian Women Work." *Women's Studies Journal* (14 November 2012) Available online at: http:// blogs.wsj.com/ India real time/2012/11/14/by –the-numbers-where-Indan-women-work/>
3. K. Satyanarayana and Susie Tharu (Ed.)Steel Nibs Are Sprouting: New Dalit Writing From South India, Dossier 2: Telugu And Kannada http://harpercollins.co.in/BookDetail.asp?Book_Code=3732
4. Vimala. "Vantillu (The Kitchen)*". Women Writing in India: 600 BC to the Present. Volume II*: The 20th Century. Ed. Susie Tharu and K. Lalita. Delhi: Oxford University Press, 1995. 599-601.
5. Shatrughna, Veena et al. *Women's Work and its Impact on Child Health and Nutrition*, Hyderabad, National Institute of Nutrition, Indian Council of Medical Research. 1993.
6. Stree Shakti Sanghatana*. "We Were Making History ….'Life Stories of Women in the Telangana People's Struggle*. New Delhi: Kali for Women, 1989.
7. Menon, Nivedita. Seeing like a Feminist.New Delhi: Zubaan-Penguin Books, 2012
8. Jayaprabha, A. "Chupulu (Stares)". *Women Writing in India: 600BC to the Present. Volume II*: The 20th Century Ed. Susie Tharu and K. Lalita. Delhi: Oxford University Press, 1995. 596-597.
9. Javeed, Shayan and AnupamManuhaar. "Women and Wage Discrimination in India: A Critical Analysis." *International Journal of Humanities and Social Science Invention* 2.4(2013)
10. Gautam, Liela and Gita Ramaswamy. "A 'conversation' between a Daughter and a Mother." *Broadsheet on Contemporary Politics*. Special Issue on *Sexuality and Harassment: Gender Politics on Campus Today*. Ed. Madhumeeta Sinha and Asma Rasheed. Hyderabad: Anveshi Research Center for Women's Studies, 2014.
11. Abdulali Sohaila. "*I Fought For My Life…and Won*."Available online at: http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulal/
12. Jeganathan Pradeep, Partha Chatterjee (Ed). "*Community, Gender and Violence Subaltern Studies XI*". Permanent Black and Ravi Dayal Publishers, New Delhi, 2000
13. K. Kapadia. The *Violence of Development: The Politics of Identity, Gender and Social Inequalities in India.* London: Zed Books, 2002
14. S. Benhabib. *Situating the Self: Gender, Community, and Postmodernism in Contemporary Ethics,* London: Routledge, 1992
15. Virginia Woolf. *A Room of One's Own.* Oxford: Black Swan. 1992.
16. T. Banuri and M. Mahmood, Just Development: Beyond Adjustment with a Human Face, Karachi: Oxford University Press, 1997

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary lndia.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will beachieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp ofhow gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division oflabour and its relation to politics and economics.
- Men and women students and professionalwill be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through pro viding accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.