

K.S.R.M. COLLEGE OF ENGINEERING, KADAPA

(AUTONOMOUS)

COMPUTER SCIENCE & ENGINEERING

COURSE STRUCTURE FOR B.TECH. COURSE (R14 REGULATIONS)

I B.TECH.

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	14211001	Mathematics-1	BS	3	1	0	30	70	5
2.	14211002	Mathematics-2	BS	3	1	0	30	70	5
3.	14221003	Engineering Physics	BS	2	0	0	30	70	3
4.	14231004	Engineering Chemistry	BS	2	0	0	30	70	3
5.	14241005	English	HS	2	0	0	30	70	3
6.	14031006	Engineering Drawing	ED	1	0	3	30	70	5
7.	14051007	Problem Solving & Programming in C	ED	3	0	0	30	70	5
8.	14991008	Engineering Workshop	ED	0	0	3	50	50	4
9.	14051009	Programming in C Lab	ED	0	0	3	50	50	4
10.	14991010	Engineering Sciences Lab	BS	0	0	3	50	50	4
11.	14241011	English Language and Communication Skills Lab	HS	0	0	3	50	50	4
		Total:		16	02	15	410	690	45

II B.TECH. I SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	14042101	Electronic Devices & Circuits	PN	3	1	0	30	70	3
2.	14052102	Data Structures	PJ	3	1	0	30	70	3
3.	14052103	Digital Logic Design	PJ	3	1	0	30	70	3
4.	14052104	Mathematical Foundations of Computer Science	PJ	3	1	0	30	70	3
5.	14122105	Electrical Engineering	PN	3	1	0	30	70	3
6.	14052106	Object Oriented Programming through C++	PJ	3	1	0	30	70	3
7.	14052107	Object Oriented Programming & Data Structures Lab	PJ	0	0	3	50	50	2
8.	14992108	Electrical & Electronics Engineering Lab	PN	0	0	3	50	50	2
		Total:		18	6	6	280	520	22

II B.TECH. II SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	14212201	Probability & Statistics	HS	3	1	0	30	70	3
	14012202	Environmental Studies	HS	4	0	0	30	70	3
2.	14052203	Database Management Systems	PJ	3	1	0	30	70	3
3.	14052204	Formal Languages & Automata Theory	PJ	3	1	0	30	70	3
4.	14052205	Java Programming	PJ	3	1	0	30	70	3
5.	14052206	Computer Organization	PJ	4	0	0	30	70	3
6.	14252207	Database Management Systems Lab	PJ	0	0	3	50	50	2
7.	14052208	Java Programming Lab	PJ	0	0	3	50	50	2
		Total:		20	4	6	280	520	22

III B.TECH. I SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	14053101	Operating Systems	PJ	3	1	0	30	70	3
2.	14053102	Computer Networks	PJ	4	0	0	30	70	3
3.	14053103	Software Engineering	PJ	4	0	0	30	70	3
4.	14053104	Compiler Design	PJ	3	1	0	30	70	3
5.	14053105	Computer Graphics	PJ	3	1	0	30	70	3
6.	14043106	Micro Processors	PN	4	0	0	30	70	3
7.	14253107	Human Values & Professional Ethics (Audit Course)	HS	2	0	0	--	--	--
8.	14053108	Computer Networks & Operating System Lab	PJ	0	0	3	50	50	2
9.	14043109	Micro Processors Lab	PN	0	0	3	50	50	2
		Total:		23	3	6	280	520	22

III B.TECH. II SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1..	14053201	Object Oriented Analysis & Design	PJ	4	0	0	30	70	3
2.	14053202	Design & Analysis of Algorithms	PJ	3	1	0	30	70	3
3.	14053203	Web Technologies	PJ	4	0	0	30	70	3
4.	14053204	Unix & Shell Programming	PJ	3	1	0	30	70	3
5.	14033205	Artificial Intelligence	PJ	3	1	0	30	70	3
6.	14053206 14053207 14053208	Elective-I 1. Wireless Sensor Networks 2. Advanced Computer Architecture 3. Multimedia Systems	PJ	4	0	0	30	70	3
7.	14243209	Advanced English & Communication Skills Lab	HS	0	0	3	50	50	2
8.	14053210	Web Technologies lab	PJ	0	0	3	50	50	2
		Total:		21	3	6	280	520	22

IV B.TECH. I SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	14254101	Managerial Economics & Financial Analysis	HS	4	0	0	30	70	3
2.	14054102	Data Warehousing & Data Mining	PJ	4	0	0	30	70	3
3.	14054103	Cloud Computing	PJ	3	1	0	30	70	3
4.	14054104	Software Testing	PJ	4	0	0	30	70	3
5.	14054105 14054106 14054107	Elective-II 1. Software Project Management 2. Digital Image Processing 3. Software Architecture	PJ	4	0	0	30	70	3
6.	14054108 14054109 14054110	Elective-III 1. Storage Area Networks 2. Service Oriented Architecture 3. Network Management Systems	PJ	4	0	0	30	70	3
7.	14054111	Soft Testing and Case tools lab	PJ	0	0	3	50	50	2
8.	14054112	Data Warehousing & Data Mining Lab	PJ	0	0	3	50	50	2
		Total:		23	1	6	280	520	22

IV B.TECH. II SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	14254201	Management Science	HS	4	0	0	30	70	3
2.	14054202	Cryptography & Network Security	PJ	4	0	0	30	70	3
3.	14054203	Design Patterns	PJ	4	0	0	30	70	3
4.	14054204 14054205 14054206	Elective-IV 1. Principles of TCP/IP 2. Soft Computing 3. Grid Computing	PJ	4	0	0	30	70	3
5.	14054207	Seminar	PJ	-	-	-	100	--	3
6.	14054208	Project Work	PJ	-	-	-	50	50	10
		Total:		16	0	0	270	330	25

I B.Tech.

(14051007) PROBLEM SOLVING AND PROGRAMMING IN C

L	T	C
3	0	5

Course Objectives:

- To understand the core aspects of computer problem solving techniques
- To understand the programming language constructs
- To understand the programming paradigms
- To understand the compound data types
- To understand dynamic memory allocation concepts

UNIT I

Introduction to Computers: Computer Systems, Computing Environment, Computer Languages, Creating and Running Programs, System Developments. Introduction to the C Language: Introduction, C programs, Identifiers, Types, Variables, Constants, Input and Output, Programming Examples.

Introduction to Computer Problem Solving: Introduction , The Problem-Solving Aspect, Top-down Design, Bottom-up Approach, Flowcharts, Implementation of Algorithms, Program Verification, The Efficiency of Algorithms, The Analysis of Algorithms.

UNIT II

Structure of C program: Expressions, Precedence and Associativity, Evaluating Expressions, Type Conversion, Statements, Sample Programs.

Selections and Making Decisions: Logical Data and Operators, Two-way Selection, Multiway Selection.

Repetition: Concept of Loop, Pretest and Post-test Loops, Initialization and Updation, Event and Counter Controller Loop, Loops in C, Looping Applications.

Fundamental Algorithms: Exchanging the values between two variables, Counting, Summation of a set numbers, Factorial Computation, Sine Function Computation, Generation of the Fibonacci Sequence, Reversing the digits of a integer, Basic conversions, Character to Number Conversion.

UNIT III

Factoring Methods: Finding Square root of a Number, The Smallest Divisor of an Integer, The GCD of two Integers, Generating Prime Numbers, Computing Prime Factor of an Integer, Computing the prime factors of an Integer, Generation of Pseudo Random Number, Raising the number to Large Power, Computing the nth Fibonacci.

Functions: Introduction, User Defined Functions, Inter-Function Communication, Standard Functions, Scope, Programming Examples.

Array Techniques: Array Order Reversal, Array Counting, Finding the Maximum Number Set, Removal Duplicates from an Ordered Array, Partitioning an Array, Finding kth smallest Element, Longest Monotone Subsequence.

Arrays: Introduction, Two Dimensional Arrays, Multi Dimensional Arrays, Inter Function Communication, Array Applications, Exchange Sort, Binary Search, Linear Search.

UNIT IV

Strings: String Concepts, C Strings, String Input/output Functions, Arrays of Strings, String Manipulation Functions, String/Data Conversion. Enumerated, Structure, and Union Types: The Type Definition, Enumerated Types, Structure, Unions, Programming Applications.

Bitwise Operators: Exact Size Integer Types, Logical Bitwise Operators, Shift Operators, Mask.

UNIT V

Pointers: Introduction, Pointers for Inter-Function Communication, Pointers to Pointers, Compatibility, Lvalue and Rvalue.

Pointer Applications: Array and Pointers, Pointer Arithmetic and Arrays, Passing an Array to a Function, Memory Allocation Functions, Array of Pointers, Programming Applications.

Binary Input/output: Text Versus Binary Streams, Standard Library Functions for Files, Converting File Type.

Linked List: Single Linked List, Insertion and Deletion

TEXT BOOKS:

1. How to solve it by Computer by R.G. Dromey, Pearson
2. Computer Science, A Structured Programming Approach Using C by Behrouz A. Forouzan & Richard F. Gilberg, Third Edition, Cengage Learning

REFERENCE BOOKS:

1. Programming in C: A Practical Approach, Ajay Mittal, Pearson.
2. The C programming Language, B. W. Kernighan and Dennis M. Ritchi, Pearson Education.
3. Problem Solving and Programming Designs in C, J. R. Hanly and E.B. Koffman.,
4. Programming with C Rema Theraja, Oxford
5. Problem Solving with C, M.T.Somashekara, PHI
6. C Programming with problem solving, J.A. Jones & K. Harrow, Dreamtech Press
7. Programming with C, R.S.Bickar, Universities Press.

I B.Tech.

**(14991008) ENGINEERING WORKSHOP
PART B - I.T. WORKSHOP**

L	P	C
0	3	4

Course Objectives:

- To provide Technical training to the students on Productivity tools like Word processors, Spreadsheets, Presentations.
- To make the students know about the internal parts of a computer, assembling a computer from the parts, preparing a computer for use by installing the operating system.
- To learn about Networking of computers and use Internet facility for Browsing and Searching.

Preparing your Computer (5 weeks)

Task 1: Learn about Computer: Identify the internal parts of a computer, and its peripherals. Represent the same in the form of diagrams including Block diagram of a computer. Write specifications for each part of a computer including peripherals and specification of Desktop computer. Submit it in the form of a report.

Task 2: Assembling a Computer: Disassemble and assemble the PC back to working condition. Students should be able to trouble shoot the computer and identify working and non-working parts. Student should identify the problem correctly by various methods available (eg: beeps). Students should record the process of assembling and trouble shooting a computer.

Task 3: Install Operating system: Student should install Linux on the computer. Student may install another operating system (including proprietary software) and make the system dual boot or multi boot. Students should record the entire installation process.

Task 4: Operating system features: Students should record the various features that are supported by the operating system(s) installed. They have to submit a report on it. Students should be able to access CD/DVD drives, write CD/DVDs, access pen drives, print files, etc. Students should install new application software and record the installation process.

Networking and Internet (4 weeks).

Task 5: Networking: Students should connect two computers directly using a cable or wireless

connectivity and share information. Students should connect two or more computers using switch/hub and share information. Crimping activity, logical configuration etc should be done by the student. The entire process has to be documented.

Task 6: Browsing Internet: Student should access the Internet for Browsing. Students should search the Internet for required information. Students should be able to create e-mail account and send email. They should get acquaintance with applications like Facebook, skype etc.

If Intranet mailing facility is available in the organization, then students should share the information using it. If the operating system supports sending messages to multiple users (LINUX supports it) in the same network, then it should be done by the student. Students are expected to submit the information about different browsers available, their features, and search process using different natural languages, and creating e-mail account.

Task 7: Antivirus: Students should download freely available Antivirus software, install it and use it to check for threats to the computer being used. Students should submit information about the features of the antivirus used, installation process, about virus definitions, virus engine etc.

Productivity tools (6 weeks)

Task 8: Word Processor: Students should be able to create documents using the word processor tool. Some of the tasks that are to be performed are inserting and deleting the characters, words and lines, Alignment of the lines, Inserting header and Footer, changing the font, changing the color, including images and tables in the word file, making page setup, copy and paste block of text, images, tables, linking the images which are present in other directory, formatting paragraphs, spell checking, etc. Students should be able to prepare project cover pages, content sheet and chapter pages at the end of the task using the features studied. Students should submit a user manual of the word processor considered.

Task 9: Spreadsheet: Students should be able to create, open, save the application documents and format them as per the requirement. Some of the tasks that may be practiced are Managing the worksheet environment, creating cell data, inserting and deleting cell data, format cells, adjust the cell size, applying formulas and functions, preparing charts, sorting cells. Students should submit a user manual of the Spreadsheet application considered.

Task 10: Presentations: creating, opening, saving and running the presentations, Selecting the style for slides, formatting the slides with different fonts, colors, creating charts and tables, inserting and deleting text, graphics and animations, bulleting and numbering, hyperlinking,

running the slide show, setting the timing for slide show. Students should submit a user manual of the Presentation tool considered.

Optional Tasks:

Task 11: Laboratory Equipment: Students may submit a report on specifications of various equipment that may be used by them for the laboratories in their curriculum starting from I B.Tech to IV. B.Tech. It can vary from department to department. Students can refer to their syllabus books, consult staff members of the concerned department or refer websites. The following is a sample list. Instructors may make modifications to the list to suit the department concerned.

- Desktop computer
- Server computer
- Switch (computer science related)
- Microprocessor kit
- Micro controller kit
- Lathe machine
- Generators
- Construction material
- Air conditioner
- UPS and Inverter
- RO system
- Electrical Rectifier
- CRO
- Function Generator
- Microwave benches

Task 12: Software: Students may submit a report on specifications of various software that may be used by them for the laboratories in their curriculum starting from I B.Tech to IV. B.Tech. The software may be proprietary software or Free and Open source software. It can vary from department to department. Students can refer to their syllabus books, consult staff members of the concerned department or refer websites. The following is a sample list. Instructors may make modifications to the list to suit the department concerned.

- Desktop operating system
- Server operating system
- Antivirus software
- MATLAB
- CAD/CAM software
- AUTOCAD

REFERENCE BOOKS:

1. Introduction to Computers, Peter Norton, Mc Graw Hill.
2. MOS study guide for word, Excel, Powerpoint & Outlook Exams”, Joan Lambert, Joyce Cox, PHI.
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
4. Networking your computers and devices, Rusen, PHI.
5. Trouble shooting, Maintaining & Repairing PCs”, Bigelows, TMH.

(14051009) PROGRAMMING IN C LAB

L	P	C
0	3	4

Course Objectives:

- To make the student learn C Programming language.
- To make the students solve problems, implement them using C language.

The Student is expected to solve at least 12 assignments from different concepts (every year 12 different experiments).

SAMPLE LIST OF EXPERIMENTS:

1. Practice DOS commands necessary for design of C programs.
2. Write, edit, debug, compile and execute sample C programs to understand the programming environment.
3. a) Write a C program to find the sum of the individual digits of a given number.
b) Write a C program to check whether a given number is a palindrome or not.
4. a) Write a C program to generate & print first n terms of the Fibonacci sequence.
b) Write a C program to find the roots of a quadratic equation.
5. a) Write a C program to compute the factorial of a given number.
b) Write a C program to generate all the prime numbers within a given range
6. a) Write a C program to generate PASCAL triangle.
b) Write a C program to find the GCD of two integers.
7. a) Write a C program to evaluate the function Sin(x) as defined by the infinite series expression.
$$\text{Sin}(x) = \frac{x}{1!} - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$$

b) Write a C program to find the square root of a given number.
8. a) Write a C program to find both smallest and largest number in a list of integers.
b) Write a C program to perform multiplication of two matrices.
9. Write a C program to read a matrix and perform the following operations.

- i) Print transpose of a matrix.
 - ii) Removal of duplicates from an ordered array.
10. a) Write a C program to perform arithmetic operations using functions.
b) Write a C program to find the factorial of a given number using recursive function.
11. a) Write a C program to count the number of vowels, constants, blank spaces, digits and special characters in a given string.
b) Write a C program to check whether a given string is palindrome or not.
12. Write a C program to read two strings and perform the following operations without using built-in string library functions.
- i) String length determination.
 - ii) Comparison of two strings.
 - iii) Concentration of two strings.
 - iv) String reversing.
13. a) Write a C program to swap the contents of two variables using pointers.
b) Write a C program to understand the usage of pointer to pointer.
14. Write a C program to define a structure with the following members.
Roll No., Name, marks in Sub1, Sub2, Sub3. Read the n students records and find the total marks of each student and print the result in the following format.

Roll No.	Name	Sub1	Sub2	Sub3	Total Marks	Result
1234	XXX	40	50	90	180	Distinction

15. Write a C program to copy the contents of one file into another file.

(14142101) ELECTRONIC DEVICES AND CIRCUITS

L T C
4 0 3

Course Objectives:

- To understand electronic devices, including diodes, bipolar junction transistors and FET
- To study various Op-Amp applications

UNIT-I

Semiconductor Devices: Intrinsic semiconductors-Electron-Hole Pair Generation, Conduction in Intrinsic Semiconductors, Extrinsic Semiconductors-N-Type and P-Type Semiconductors, Comparison of N-Type and P-Type Semiconductors. The p-n Junction -Drift and Diffusion Currents, The p-n Junction Diode-Forward Bias, Reverse Bias, Volt-Ampere Characteristics-Diode Specifications, Applications of Diode, Diode as a Switch. Diode as a Rectifier-Half-wave Rectifier, Full-Wave Rectifier, Full-Wave Bridge Rectifier, Rectifiers with Filters, Zener Diode-Volt-Ampere Characteristics, Zener Diode as Voltage Regulator.

UNIT-II

BJT: Bipolar Junction Transistor (BJT) – Types of Transistors, Operation of NPN and PNP Transistors, Input-Output Characteristics of BJT-CB, CE and CC Configurations, Relation between I_C , I_B and I_E . Transistor Biasing- Fixed Bias, Voltage Divider Bias, Transistor Applications- Transistor as an Amplifier, Transistor as a Switch,.

UNIT-III

Junction Field Effect Transistor (JFET): Theory and Operation of JFET, Output Characteristics, Transfer Characteristics, Configurations of JFET-CD, CS and CG Configurations, JFET Applications- JFET as an Amplifier, JFET as a Switch, Comparison of BJT and JFET, MOSFET-The Enhancement and Depletion MOSFET, Static Characteristics of MOSFET, Applications of MOSFET.

UNIT – IV

Oscillators and Op-Amps: Sinusoidal Oscillators, Barkhausen Criteria for Oscillator Operation, Components of an Oscillator-Transistor Amplifier Circuits, Feedback Circuits and Oscillator Circuits, Classification of Oscillators, LC Tuned, RC Phase Shift Oscillator circuits.

UNIT-V

Operational Amplifiers(Op-Amps)-Symbol of an Op-Amp, single Input and Dual Input Op-Amps(Differential Amplifier), Characteristics of an Ideal Op-Amp, Basic Forms of Op-Amps-Inverting & Non-Inverting Amplifiers, Applications of Op-Amps, summing, Differential, Integrator, differentiator Amplifier.

Text Books:

1. Electronic Devices and Circuits – S. Salivahana, N.Suresh Kumar, A. Vallavaraj, 2nd Edition, 2008, TMH.
2. Integrated Electronic - J.Millman and C.C.Halkias , 2nd edition, 1998, TMH.

Reference Books :

1. Basic Electrical and Electronics Engineering, M.S.Sukhija, T.K.Nagsarkar, Oxford University Press, 1st Edition, 2012.
2. Basic Electrical and Electronics Engineering, S.K Bhattacharya, Pearson Education, 2012.

(14052102) DATA STRUCTURES

L T C
3 1 3

Course Objectives:

- To develop skills to design and analyze linear and non linear data structures
- To develop algorithms for manipulating linked lists, stacks, queues, trees and graphs
- To develop recursive algorithms as they apply to trees and graphs.

UNIT-I

Introduction: Data structures, Storage structures & File structures, Primitive & Non-primitive data structures, Linear & Non linear data structures, Abstract Data Type (ADT), **Linear Lists :** ADT , Array & Linked representations, **Arrays :** ADT, **Linked Lists:** Single Linked List- Insertion, Deletion, Double Linked List- Insertion, Deletion.

UNIT-II

Stacks: Definition, ADT, Array & Linked representations, Operations & Applications, **Queues:** Definition, ADT, Array & Linked representations, Operations, Circular Queues, Dequeues.

UNIT-III

Trees: Basic terminology, Binary Trees - Definition, Properties, Representation, ADT, Complete Binary Tree, Full Binary Tree, **Tree Taversal Algorithm:** Inorder, Preorder and Postorder, **Priority Queues:** Definition, ADT, Heaps, Left list Trees, **Binary Search Tree (BST):** Definition, ADT, Operations and Implementations, BST with Duplicates, Indexed BST.

UNIT-IV

Balanced Search Trees: AVL, Red-Black & Splay Trees, **Graphs:** Terminology, Representations, **Graph Traversal:** Depth First Search (DFS) & Breadth First Search (BFS), Minimum spanning Trees.

UNIT-V

Sorting: Selection, Insertion, Bubble, Merge, Quick, Heap, Radix **Searching:** Sequential & Binary Search

TEXT BOOKS:

1. An introduction to Data Structures with Applications - Jean-Paul Tremblay and Paul G.Sorenson, TMH.
2. Data Structures, Algorithms and Applications in C++ - Sahni, McGraw-Hill.

REFERENCE BOOKS:

1. Data Structures and Algorithms using C++, Ananda Rao Akepogu and Radhika Raju Palagiri, Pearson Education.
2. Data Structures and Algorithms, G A V Pai, TMH
3. Data Structures, Lipschutz,, Schaum's Outline series, TMH
4. Data Structures and Program Design in C, R. Kruse etal, Pearson Education.

(14052103) DIGITAL LOGIC DESIGN

L T C
3 1 3

Course Objectives:

- Acquire the skills to manipulate and examine Boolean algebraic expressions,
- To understand the fundamental principles of digital design
- To acquaint with classical hardware design for both combinational and sequential logic circuits.

UNIT I

BINARY SYSTEMS: Digital Systems, Binary Numbers, Number base conversions, Octal and Hexadecimal Numbers, complements, Binary codes, Binary Storage and Registers.

BOOLEAN ALGEBRA AND LOGIC GATES: Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and properties of Boolean algebra, Boolean functions, canonical and standard forms, other logic operations, Digital logic Gates, integrated circuits.

UNIT II

OPTIMIZED IMPLEMENTATION OF LOGIC FUNCTION: The Karnaugh map method, minimization of Product of Sum forms, incompletely specified functions, Multi level NAND and NOR circuits, Exclusive – Or and Equivalence functions ,A tabular method for minimization.

UNIT III

COMBINATIONAL LOGIC: Combinational Circuits, Design procedure, Code converters, Binary parallel adder, Decimal Adder, Binary multiplier, Magnitude comparator, Decoders, demultiplexers, Encoders, Multiplexers, Read Only Memory (ROM), PLA.

UNIT IV

SYNCHRONOUS SEQUENTIAL LOGIC: Sequential circuits, latches, Flip-Flops, Analysis of clocked sequential circuits, State Reduction and Assignment, Design Procedure.

UNIT V

REGISTERS AND COUNTERS: Registers, shift Registers, Ripple counters synchronous counters, Johnson counter

ASYNCHRONOUS SEQUENTIAL LOGIC: Introduction, Analysis of asynchronous sequential circuits, Synthesis of asynchronous sequential circuits, State Reduction , Hazards.

TEXT BOOKS:

1. Digital Design – Third edition, M.Morris Mano, Pearson Education/PHI.
2. Fundamentals of digital logic design with VHDL By Stephen Brown and I Zvonko Vranesic, second edition, The McGraw-Hill.
3. Fundamentals of logic design, Roth, 5th edition, Thomson.

REFERENCES:

1. Switching and Finite Automata Theory by Zvi. Kohavi, Tata McGraw Hill.
2. Switching and Logic Design, C.V.S. Rao, Pearson Education
3. Digital Principles and Design – Donald D.Givone, Tata McGraw Hill, Edition.
4. Fundamentals of Digital Logic & Micro Computer Design, 5TH Edition, M. Rafiquzzaman
John Wiley

II B.Tech. I Sem

**(14052104) MATHEMATICAL FOUNDATIONS OF
COMPUTER SCIENCE**

L T C
3 1 3

Course Objectives:

- To make the students learn logical thinking and be able to apply enumerating techniques.
- To develop an understanding of functions and relations.
- To enable the students understand graph theoretic techniques.

UNIT-I

Mathematical Logic: Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms.

UNIT-II

Relations: Properties of Binary Relations, equivalence, transitive closure, compatibility and partial ordering relations, Lattices, Hasse diagram.

Functions: Inverse Function, Composition of functions, recursive Functions, Lattice and its Properties,

UNIT-III

Algebraic structures: Algebraic systems examples and general properties, Semi groups and monads, groups, sub-groups, homomorphism, Isomorphism.

UNIT-IV

Elementary Combinatorics: Basis of counting, Enumerating Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, the principles of Inclusion – Exclusion. Pigeon hole principles and its application

UNIT-V

Graph Theory: Basic Concepts, Representation of Graph, Isomorphism and Sub graphs, planar Graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Spanning Trees, Chromatic Numbers

TEXT BOOKS:

1. Discrete Mathematics for Computer Scientists & Mathematicians, 2/e, J.L.Mott, A. Kandel, T.P. Baker, PHI
2. Discrete mathematical structures with applications to computer science - J P Tremblay and Manohar Mc Graw Hill

REFERENCE BOOKS:

1. Elements of Discrete Mathematics- A Computer Oriented Approach, C.L.Liu, D.P. Mohapatra, 3/e, TMH.
2. Discrete and Combinatorial Mathematics- An Applied Introduction, Ralph. P.Grimaldi, 5/e, Pearson Education.
3. Discrete Mathematics and its applications, 6th edition, K.H.Rosen, TMH.
4. Discrete Mathematical Structures, Mallik and Sen, Cengage Learning.
5. Discrete Mathematical Structures, Bernard Kolman, Robert C. Busby, Sharon Cutler Ross, PHI/ Pearson Education.
6. Discrete Mathematics with Applications, Thomas Koshy, Elsevier.
7. Discrete Mathematics, Lovasz, Springer.

II B.Tech. I Sem

(14022105) ELECTRICAL ENGINEERING

L	T	C
3	1	3

Course Objectives:

- To get exposed to the basic laws in circuit analysis
- To understand the operation of electrical machines
- To acquire knowledge about illumination and earthing.

UNIT I

Basics of Electrical Circuits: Ohm's law, Kirchoff's laws, types of elements, types of sources, resistive networks, inductive network, Capacitive network, series -parallel Circuits, star – delta and delta – star transformations – problems

Network Theorems: Superposition, Thevinin's, Maximum power transfer theorems – problems

UNIT II

Alternating quantities:

Principles of ac Voltages, waveform and basic definitions, root mean square and average values of alternating currents and voltages, form factor and peak factor, analysis of ac circuits with single basic network elements, single phase series and parallel circuits – problems.

UNIT III

DC Generator:

Principle of operation, Constructional details, emf equation, types of D.C Generators - problems

D.C Motor:

Principle of operation, Constructional details, torque equation, losses and efficiency, testing – Swinburne's test, Load test

UNIT IV

1- Φ Transformer:

Principle of operation, constructional details, losses, efficiency, Regulation, Testing: OC and SC test.

I - Φ Induction Motors, Principle of operation – Starting methods.

UNIT V

Rectifier and power supplies: Half – Wave and full wave rectifiers ,C- Filler, Series and Shunt regulators, Principle of operation of buck – boost and servo voltage regulators, Spike Suppressors. Introduction to Switched mode power supplies (SMPS) and uninterruptible power supplies (Only Concepts).

TEXT BOOKS:

1. Basic Electrical Engineering – M.S. Naidu and S. Kamakshaiah -TMH
2. Principles of Electrical Engineering - V.K. Mehta, S.Chand Publications.
3. Electrical Technology – B.L Thereja, S. Chand
4. Basic Electronics - Grob B, 8th Editions, Tata McGraw hill ,2000

REFERENCE BOOKS:

1. Basic Electrical Engineering – T.K. Nagasarkar and M.S. Sukhji Oxford university press.
2. Electrical and Electronics Technology – Huges pearson education.
3. Theory and problems of basic electrical engineering – D.P.Kothari and I.J.Nagrath PHI.
4. Fundamentals of Electrical Electronics Engineering - T.Thyagarajan, SCITECH publications 5th Edition-2007.

II B.Tech. I Sem

(14052106) OBJECT ORIENTED PROGRAMMING THROUGH C++

L T C
3 1 3

Course Objectives:

- To make the students understand the features of object-oriented design and familiarize them with virtual functions, templates and exception handling.
- To enable the students solve various engineering problems in C++ programming language.

UNIT I

Principles of Object-Oriented Programming: Object-Oriented Programming Paradigm, Basic Concepts of Object-Oriented Programming, Benefits of OOP, Applications of OOP.

Beginning with C++: Comments, Output Operator, The iostream File, Variables, Input Operator, Cascading of I/O Operators, Structure of C++ program.

UNIT II

Tokens, Expressions and Control Structures: Tokens, Keywords, Identifiers and Constants, Basic Data Types, Declaration of variables, Dynamic initialization of variables, Reference variables, Operators in C++, Scope resolution operator, Memory management operators, Manipulators, Control Structures,

Functions in C++: Function Prototyping, Call by reference, Return by reference, Inline Functions, Function Overloading.

UNIT III

Classes and Objects: Specifying a Class, Defining Member Functions, Memory allocation for objects, Static data members, Static member functions, Arrays of objects, Friendly functions,

Constructors and Destructors: Constructors, Parameterized constructors, Multiple constructors in a class, Constructors with default arguments, Copy constructor, Dynamic constructor, Destructors.

UNIT IV

Operator Overloading: Defining operator overloading, Overloading Unary operators, Overloading Binary operators, Overloading Binary operators using Friends.

Inheritance: Introduction, Single Inheritance, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance, Virtual base classes, Abstract classes.

UNIT V

Pointers, Virtual Functions and Polymorphism: this Pointer, Virtual Functions, Pure virtual functions.

Managing Console I/O Operations: Unformatted I/O operations, Formatted console I/O operations.

Templates: Class Templates, Function Templates, Overloading Template functions, Member function Templates.

Exception Handling: Basics of Exception handling, Exception handling mechanism.

TEXT BOOK:

1. The Complete Reference C++, Herbert Schildt, TMH 4th Edition.
2. Object Oriented Programming With C++, E. Balagurusamy, TMH 6th edition.
- 3.

REFERENCE BOOKS:

1. Object oriented programming with ANSI and TURBO C++, Ashok N Kamathane, Pearson education.
2. Object oriented programming with C++, Saurav Sahay, Oxford.
3. Learning C++ Programming :From Problem Analysis To Program Design, Malik, Thomson
4. Learning - Computer Science :A Structured Approach Using C++,2nd Ed., Forouzan, Thomson

II B.Tech. I Sem

**(14052107) OBJECT ORIENTED PROGRAMMING & DATA
STRUCTURES LAB**

L P C
0 3 2

Course Objective:

- To make the students learn the implementation of insertion, deletion and display operations on various linear and non-linear data structures.

The Student is expected to solve at least 10 experiments from covering 5 experiments from Object Oriented Programming and Data Structures courses each (every year 10 different experiments).

Sample List of Experiments from Objected Oriented Programming Course

1. Simple Programs without using Classes.
2. Programs using classes.
3. Programs using Constructor and Destructor.
4. Program illustrating Operator Overloading.
5. Program illustrating function overloading.
6. Program that the concepts of different forms of inheritance
7. Program that uses file concept.
9. Program that uses the concept of friend functions.
10. Program that uses concept of polymorphism.

Sample List of Experiments from Data Structure Course

1. Write a program to implement stack operation by using arrays.
2. Write a program to implement stack operation by using linked lists.
3. Write a program that uses stack operations to convert a given infix to postfix conversion.
4. Write a program that uses stack operations to evaluate postfix expression.
5. Write a program to implement queues operations by using arrays.
6. Write a program to implement queues operations by using linked lists.
7. Write a program to implement operations on circular queues by using arrays.
8. Write a program to implement operations on circular queues by using linked lists.

9. Write a program to implement operations on single linked list.
10. Write a program to implement operation on double linked list.
11. Write a program to implement insertion, deletion, and traversal operations on trees.
12. Write a program to implement the following graph traversal algorithms.
 - (i) Depth first traversal
 - (ii) Breadth first traversal
13. Write programs to sort list of elements using
 - (i) Selection sort
 - (ii) Bubble soft
 - (iii) Merge sort
 - (iv) Quick sort
14. Write programs to implement the following searching techniques.
 - (i) Linear search
 - (ii) Binary search.

II B.Tech. I Sem

**(14992108) ELECTRICAL & ELECTRONICS
ENGINEERING LAB**

L P C
0 3 2

Course Objectives:

- To get exposed to the basic laws in circuit analysis
- To understand the operation of electrical machines
- To introduce the basic design concepts and conduct experiments on CRO, CDS, FG, half and full wave, transistor characteristics, shift registers, Summing and difference amplifiers.

PART – A ELECTRICAL LAB:

1. Verification of KCL and KVL.
2. Verification of Superposition theorem.
3. Verification of Thevenin's theorem.
4. Verification of Maximum power Transfer Theorem.
5. Load test on DC shunt motor.
6. OC & S.C Test on 1- \emptyset Transformer (Predetermination of efficiency and regulation at given power Factor)

PART – B- ELECTRICAL LAB:

1. V-I Characteristics of a PN – Junction diode.
2. V-I Characteristics of a Zener diode.
3. Input – output Characteristics of a BJT in CB Configuration.
4. Frequency response of CE amplifier.
5. Load Characteristics of Half wave rectifier with and without filter.
6. Op-amp non-inverting amplifier.

II B.Tech. II Sem

(14212201) PROBABILITY AND STATISTICS

L T C
4 0 3

Course Objective:

- To help the students in getting a thorough understanding of the fundamentals of probability and usage of statistical techniques like testing of hypothesis, Statistical Quality Control and Queuing theory

UNIT I

Random variables - Discrete random variables - Continuous random variables –Probability distribution function – Discrete and continuous probability distribution – Mathematical Expectation, Variance and standard deviation of probability distribution. Binomial , Poisson and Geometric distributions - Related properties.

UNIT II

Continuous distributions: Uniform – Exponential- Gamma – Normal – Log normal- Weibull distributions and related properties.

UNIT III

Test of Hypothesis - Population and sample - Confidence interval of mean from normal distribution- Statistical hypothesis - null and alternative hypothesis – level of significance. Test of significance - Tests based on normal distribution –z -test for means and proportions. Small samples - t-test for one sample, two sample problem and paired t-test - F-test - Chi-square test (testing of goodness of fit and independence).

UNIT IV

Correlation and regression – Correlation – Co-efficient of correlation – lines of Regression- Relation between correlation and Regression co-efficients- rank correlation – Fitting of a straight line using the method of least squares - Multiple linear regression and its applications.

UNIT V

Statistical quality control: Concept of quality of a manufactured product - defect and defectives - Causes of variation - Random and assignable causes -The principle of Shewhart control chart – Charts for attributes and variable quality characteristics - Construction and operation of p-chart, c-chart, X-bar chart and R-chart.

TEXT BOOKS:

1. Higher Engineering Mathematics, Dr. B.SGrewal, Khanna Publishers-42 edition.
2. Walpole and Myrs, Probability & Statistics for Engineers & Scientists, Seventh edition, Pearson Education Asia, 2002,
3. Johnson, Probability & Statistics for Engineers, Fifth edition, Prentice Hall of India.

REFERENCE BOOKS:

1. Probability & Statistics by E. Rukmangadachari& E. Keshava Reddy Pearson Publisher
2. Statistical Methods by S.PGuptha, S Chand Publications.

II B.Tech. II Sem

(14012202) ENVIRONMENTAL STUDIES

L T C
4 0 3

Course Objective:

- To make the students to get awareness on environment, to understand the importance of protecting natural resources, ecosystems for future generations and pollution causes due to the day to day activities of human life to save earth from the inventions by the engineers.

UNIT 1

Multidisciplinary nature of environmental studies: Definition, scope and importance – Need for public awareness

Natural Resources: Renewable and non-renewable resources – Natural resources and associated problems; (a) Forest resources – Use and over-exploitation, deforestation, case studies – Timber extraction, mining, dams and their effects on forest and tribal people; (b) Water resources – Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems; (c) Mineral resources – Use and exploitation, environmental effects of extracting and using mineral resources, case studies; (d) Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies; (e) Energy resources –Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies; (f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification; Role of an individual in conservation of natural resources; equitable use of resources for sustainable lifestyles

UNIT II

Ecosystems: Concept of an ecosystem – Structure and function of an ecosystem – Producers, consumers and decomposers – Energy flow in the ecosystem – Ecological succession – Food chains, food webs and ecological pyramids; Introduction, types, characteristic features, structure

and function of the following ecosystems (a) Forest ecosystem, (b) Grassland ecosystem, (c) Desert ecosystem, (d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT III

Biodiversity and its conservation: Introduction – Definition : genetic, species and ecosystem diversity; Bio-geographical classification of India; Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values; Biodiversity at global, National and local levels; India as a mega-diversity nation; Hot-spots of biodiversity; Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts; Endangered and endemic species of India; Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity

UNIT IV

Environmental Pollution: Definition – Cause, effects and control measures of (a) Air pollution, (b) Water pollution, (c) Soil pollution, (d) Marine pollution, (e) Noise pollution, (f) Thermal pollution, (g). Nuclear hazards; Solid waste Management: Causes, effects and control measures of urban and industrial wastes - Role of an individual in prevention of pollution – Pollution case studies; Disaster management: floods, earthquake, cyclone and landslides

UNIT V

Social Issues and the Environment: From Unsustainable to Sustainable development – Urban problems related to energy – Water conservation, rain water harvesting, watershed management – Resettlement and rehabilitation of people; its problems and concerns; • Environmental ethics : Issues and possible solutions; Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies; Wasteland reclamation; Consumerism and waste products; Environment Protection Act; Air (Prevention and Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act; Issues involved in enforcement of environmental legislation; Public awareness

Human Population and the Environment: Population growth, variation among nations – Population explosion – Family Welfare Programme; Environment and human health; Human Rights; Value Education; HIV/AIDS; Women and Child Welfare; Role of Information Technology in Environment and human health, case studies; Field work: Visit to a local area to

document environmental assets river/forest/grassland/hill/mountain - Visit to a local polluted site-Urban/Rural/Industrial/Agricultural; Study of common plants, insects, birds; Study of simple ecosystems-pond, river, hill slopes, etc.

TEXT BOOKS:

1. Text book of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission, Universities Press.
2. Environmental Studies by Benny Joseph, Mc.Graw Hill Publications.
3. Principles and a basic course of Environmental science for under graduate course by Kousic, KouShic.
4. Text book of Environmental Sciences and Technology by M.Anji Reddy, BS Publication.

REFERENCE BOOKS:

1. Environmental sciences and engineering – J. Glynn Henry and Gary W. Heinke – Printice hall of India Private limited.
2. Environmental Studies by Anindita Basak – Pearson education.
3. Introduction to Environmental engineering and science by Gilbert M. Masters and Wendell P. Ela - Prentice Hall of India Private limited.

(14052203) DATA BASE MANAGEMENT SYSTEMS

L T C
3 1 3

Course Objectives:

- To make the students confident in maintaining huge amounts of data by creating tables and accessing them.
- To apply concurrency control and recovery techniques during transaction execution.

UNIT I

Introduction - Database-System Applications, Purpose of Database Systems, View of Data, Database languages, Database Users and Administrators, History of Database Systems.

Introduction to the Relational Model - Structure of Relational Databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages, Relational Operations.

Database Design and the E-R Model - Overview of the Design Process, The Entity-Relationship Model, Constraints, Removing Redundant Attributes in Entity Sets, Entity-Relationship Diagrams, Reduction to Relational Schemas, Entity-Relationship Design Issues, Extended E-R Features, Alternative Notations for Modeling Data.

UNIT II

Introduction to SQL - Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Sub queries, Modification of the Database .

Intermediate SQL - Transactions, Integrity Constraints, SQL Data Types and Schemas, Authorization

Advanced SQL - Functions and Procedures, Triggers.

Formal Relational Query Languages - The Relational Algebra, the Tuple Relational Calculus, the Domain Relational Calculus.

UNIT III

Schema Refinement and Normal Forms - Schema Refinement – Problems Caused by Redundancy, Decompositions, Problems related to decomposition. Reasoning about Functional Dependencies, First, Second, Third Normal forms, BCNF. Lossless join Decomposition, Dependency- preserving Decomposition. Schema refinement in Data base Design, Multi valued

Dependencies, Fourth Normal Form, Join Dependencies, Fifth Normal Form, Inclusion Dependencies.

UNIT IV

Query Processing - Overview, Measures of Query Cost, Selection Operation, Sorting, Join Operation, Other Operations, Evaluation of Expressions

Query Optimization - Overview, Transformation of Relational Expressions, Estimating Statistics of Expression Results, Choice of Evaluation Plans.

Transactions - Transaction Concept, A Simple Transaction Model, Storage Structure, Transaction Atomicity and Durability, Transaction Isolation, Serializability, Transaction Isolation and Atomicity, Transaction Isolation Levels, Implementation of Isolation Levels, Transactions as SQL Statements .

UNIT V

Concurrency Control - Lock-Based Protocols, Deadlock Handling, Multiple Granularity, Timestamp-Based Protocols, Validation-Based Protocols, Multi version Schemes, Snapshot Isolation, Insert Operations, Delete Operations, and Predicate Reads, Weak Levels of Consistency in Practice.

Recovery System - Failure Classification, Storage, Recovery and Atomicity, Recovery Algorithm, Buffer Management, Failure with Loss of Nonvolatile Storage, Early Lock Release and Logical Undo Operations, Remote Backup Systems.

TEXT BOOKS:

1. Silberschatz, Korth, *Database system Concepts*. 5th Edition, McGrawhill.
2. Raghurama Krishnan, Johannes Gehrke, *Data base Management Systems*. 3rd Edition, Tata McGrawHill.

REFERENCE BOOKS:

1. Elmasri, Navathe, *Fundamentals of Database Systems*, Pearson Education.
2. Peter Rob, Ananda Rao and Carlos Corone, *Database Management Systems*, Cengage Learning.
3. C.J.Date, *Introduction to Database Systems*, Pearson Education.

II B.Tech. II Sem

(14052204) FORMAL LANGUAGES AND AUTOMATA THEORY

L	T	C
3	1	3

Course Objectives:

- To be able to construct finite state machines and the equivalent regular expressions and prove the equivalence of languages described by finite state machines and regular expressions.
- To be able to construct pushdown automata and the equivalent context free grammars, Turing machines and Post machines.

UNIT I

Fundamentals: Strings, Alphabet, Language, Operations, Finite state machine, definitions, finite automaton model, acceptance of strings, and languages, deterministic finite automaton and non deterministic finite automaton, transition diagrams and Language recognizers.

Finite Automata: NFA with ϵ transitions - Significance, acceptance of languages. Conversions and Equivalence : Equivalence between NFA with and without ϵ transitions, NFA to DFA conversion, minimization of FSM, equivalence between two FSM's, Finite Automata with output- Moore and Mealy machines.

UNIT II

Regular Languages: Regular sets, regular expressions, identity rules, Constructing finite Automata for a given regular expressions, Conversion of Finite Automata to Regular expressions. Pumping lemma of regular sets, closure properties of regular sets (**proofs not required**).

UNIT III

Grammar Formalism: Regular grammars-right linear and left linear grammars, equivalence between regular linear grammar and FA, inter conversion, Context free grammar, derivation trees, sentential forms. Right most and leftmost derivation of strings.

Context Free Grammars: Ambiguity in context free grammars. Minimisation of Context Free Grammars. Chomsky normal form, Greiback normal form, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL (**proofs omitted**).

UNIT IV

Push Down Automata: Push down automata, definition, model, acceptance of CFL, Acceptance by final state and acceptance by empty state and its equivalence. Equivalence of CFL and PDA, interconversion. **(Proofs not required)**. Introduction to DCFL and DPDA.

UNIT V

Turing Machine: Turing Machine, definition, model, design of TM, Computable functions, recursively enumerable languages. Church's hypothesis, counter machine, types of Turing machines (proofs not required).

Computability Theory: Chomsky hierarchy of languages, linear bounded automata and context sensitive language, LR(0) grammar, decidability of problems, Universal Turing Machine, undesirability of post's Correspondence problem, Turing reducibility, **Definition of P and NP problems, NP complete and NP hard problems.**

TEXT BOOKS:

1. "Introduction to Automata Theory Languages and Computation". Hopcroft H.E. and Ullman J. D. Pearson Education.
2. Introduction to Theory of Computation - Sipser 2nd edition Thomson

REFERENCE BOOKS:

1. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley.
2. Introduction to languages and the Theory of Computation ,John C Martin, TMH
3. "Elements of Theory of Computation", Lewis H.P. & Papadimition C.H. Pearson /PHI.
- 4 Theory of Computer Science and Automata languages and computation -Mishra and Chandrashekar, 2nd edition, PHI.
5. Theory of Computation, By K.V.N. Sunitha and N.Kalyani

(14052205) JAVA PROGRAMMING

L T C
3 1 3

Course Objectives:

- To give the students a firm foundation on Java concepts like Primitive data types, Java control flow, Methods, Object-oriented programming, Core Java classes, packages and interfaces, multithreading.
- To provide the students with an understanding of Java applets, Abstract Window Toolkit and exception handling.

UNIT I

Object Oriented Programming basics: Need for OOP paradigm, summary of OOP concepts,

Java Basics: History of Java, Java buzzwords, Simple java program, classes and objects – concepts of classes, objects, constructors, methods, Introducing access control, **this** keyword, overloading methods and constructors.

UNIT II

Inheritance : Hierarchical abstractions, Base class object, subclass, subtype, benefits of inheritance, **super** uses, using **final** with inheritance, **polymorphism**- method overriding, abstract classes.

Packages and Interfaces: Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing

interface, applying interfaces, variables in interface and extending interfaces.

UNIT III

Exception handling and multithreading: Concepts of exception handling, exception hierarchy, usage of try, catch, throw, throws and finally, creating own exception sub classes. Differences between multi threading and multitasking, thread life cycle, creating threads, synchronizing threads.

UNIT IV

Event Handling : Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, The AWT class hierarchy, user interface components- labels, button, scrollbars, text components, check box, check box groups, choices, graphics, layout manager types – boarder, grid, flow, card and grid bag.

UNIT V

Applets : Concepts of Applets, differences between applets and applications, life cycle of an applet, creating applets, passing parameters to applets.

Swings : Introduction, JApplet, JFrame and JComponent, Icons and Labels, text fields, JButton class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, and Tables.

TEXT BOOKS :

1. Java; the complete reference, 7th editon, Herbert schildt, TMH.
2. Understanding OOP with Java, updated edition, T. Budd, Pearson Education.

REFERENCE BOOKS:

1. An Introduction to programming and OO design using Java, J.Nino and F.A.Hosch, John wiley & sons.
2. An introduction to Java programming and object oriented application development, R.A. Johnson- Thomson.
3. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell, eighth Edition, Pearson Education.
4. Core Java 2, Vol 2, Advanced Features, Cay.S.Horstmann and Gary Cornell, eighth Edition, Pearson Education
5. Object Oriented Programming through Java, P. Radha Krishna, University Press.
6. Java and Object Orientation, an introduction, John Hunt, second edition, Springer.

(14052206) COMPUTER ORGANIZATION

L T C
4 0 3

Course Objectives:

- To make the students understand the structure of computers and internal organization of different units like memory, I/O devices, registers.
- To study in detail the operation of arithmetic unit including the algorithms and implementation of fixed and floating point addition, subtraction, multiplication and division operations.

UNIT I

Basic concepts of computers: Computer Types, Functional units, Basic operational concepts, Bus Structures, Performance, Multiprocessors and multi computers, Data Representation- Fixed Point Representation, Floating – Point Representation.

UNIT II

Register Transfer: Register Transfer language, Register Transfer, Bus and memory transfers,
Micro operations : Arithmetic Micro operations, logic micro operations, shift micro operations, Arithmetic logic shift unit, instruction codes, Computer instructions, memory – reference instructions , Input – Output and Interrupt, Addressing modes.

UNIT III

Micro programmed control: Control memory, Address sequencing, micro program example, design of control unit, Hard wired control, Micro programmed control.

Computer Arithmetic: Addition and subtraction, multiplication Algorithms, Division Algorithms.

UNIT IV:

Memory: Basic concepts, Cache memory, performance considerations, Virtual memory

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

UNIT V

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

Multiprocessors: Characteristics of Multiprocessors, Interconnection Structures, Interprocessor Arbitration, Inter Processor Communication and Synchronization.

TEXT BOOKS:

1. Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.
2. Computer Systems Architecture – M.Moris Mano, IIIrd Edition, Pearson/PHI.

REFERENCE BOOKS:

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI.
2. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition, PHI/Pearson.
3. Fundamentals of Computer Organization and Design, - Sivaraama Dandamudi, Springer Int. Edition.
4. Computer Architecture a quantitative approach, John L. Hennessy and David A. Patterson, Fourth Edition, Elsevier.
5. Computer Architecture: Fundamentals and principles of Computer Design, Joseph D. Dumas II, BS Publication.

II B.Tech. II Sem

(14052207) DATABASE MANAGEMENT SYSTEMS LAB

L P C
0 3 2

Course Objectives:

- To create database and query it using SQL queries and design forms using forms designer.
- To understand the significance of integrity constraints, referential integrity constraints, triggers, assertions.

Student is expected to implement at least 10 experiments from Database Management System Course covering various concepts (Every year 10 different experiments).

List of Sample Experiments:

1. Practicing DDL Commands
2. Practicing DML Commands.
3. Implementation of Aggregate operations
4. Implementation of special operators such as LIKE, BETWEEN, IN, EXISTS etc.
5. Implementation of SET operations (UNION, INTERSECTION, MINUS, JOIN etc)
6. Implementation of Oracle Functions
7. Creating Views, Updatable views
8. Creation of Triggers
9. Creation of Cursors
10. Writing sample programs in PL/SQL

(14052208) JAVA PROGRAMMING LAB

L P C
0 3 2

Course Objective:

- To be able to understand and implement Java applications and applets, Primitive data types, Java control flow, Methods, classes, packages, multithreading and exception handling.

Student is expected to implement at least 10 experiments from Java Programming Course covering various concepts (Every year 10 different experiments).

List of Sample Experiments:

1. Write a Java program that prints all real solutions to the quadratic equation . Read in a, b, c and use the quadratic formula. If the discriminant is negative, display a message stating that there are no real solutions.
2. Write a Java program that prints the Fibonacci series.
3. Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.
4. Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers
5. Write a Java program to multiply two given matrices.
6. Write a Java program that checks whether a given string is a palindrome or not.
7. Write a Java program for sorting a given list of names in ascending order.
8. Write a Java program to make frequency count of words in a given text.
9. Write a Java program to find the factorial of a given number using recursion
10. Write a Java program that reads a 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.
11. Write a Java program that implements stack ADT
12. Write a Java program that evaluates the postfix expression
13. Write a Java program to implement packages
14. Write a Java program to implement interfaces
15. Write a Java program to implement exception handling
16. Write a Java program to implement multithreading

- 17.** Write a Java program to implement abstract methods and abstract classes
- 18.** Write a Java program to develop an applet that displays a simple message
- 19.** Write a Java program to develop an applet 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.
- 20.** Write a Java program for handling mouse events.
- 21.** Write a Java program for handling keyboard events.
- 22.** 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.

(14053101) OPERATING SYSTEMS

L	T	C
3	1	3

Course Objectives:

- To have an overview of functions of operating systems.
- To know the components of an operating system.
- To have a thorough knowledge of process management.
- To have a thorough knowledge of storage management.
- To know the concepts of file systems

UNIT I

Operating Systems Basics: Operating systems functions, Overview of computer operating systems, distributed systems, operating system services and systems calls, system programs, operating system structure.

UNIT II

Process Management: Process concepts, scheduling-criteria, algorithms, their evaluation.

Concurrency: Process synchronization, the critical-section problem, Peterson's Solution, semaphores, classic problems of synchronization, monitors.

UNIT III

Memory Management: Swapping, contiguous memory allocation, paging, structure of the page table, segmentation, virtual memory, demand paging, page-replacement, algorithms, Allocation of frames.

UNIT IV

Deadlocks: system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock.

Files: The concept of a file, Access Methods, Directory structure, File system mounting, File sharing, protection.

UNIT V

Protection: Protection, Goals of Protection, Principles of Protection, Domain of protection Access Matrix, Implementation of Access Matrix.

Security: The Security problem, program threats, user authentication.

TEXT BOOKS:

1. Operating System Concepts, Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Eighth edition, John Wiley.
2. Operating Systems, A Concept based Approach-D.M.Dhamdhere, Second Edition, TMH.

REFERENCE BOOKS:

1. Operating Systems: Internals and Design Principles, Stallings, Sixth Edition–2009, Pearson Education.
2. Modern Operating Systems, Andrew S Tanenbaum, Second Edition, PHI.
3. Operating Systems, S.Haldar, A.A.Aravind, Pearson Education.
4. Principles of Operating Systems, B.L.Stuart, Cengage learning, India Edition.
5. Operating Systems, A.S.Godbole, Second Edition, TMH.
6. An Introduction to Operating Systems, P.C.P. Bhatt, PHI.
7. Operating Systems, G.Nutt, N.Chaki and S.Neogy, Third Edition, Pearson Education.
8. Operating Systems, R.Elmasri, A,G.Carrick and D.Levine, Mc Graw Hill.

(14053102) COMPUTER NETWORKS

L T C
4 0 3

Course Objectives:

- Study the evolution of computer networks and future direction
- Study the concepts of computer networks from layered perspective
- Study the issues open for research in computer networks

UNIT I

Introduction: Networks, Network Types, Internet History, Standards and Administration, Network Models: Protocol Layering, TCP/IP Protocol Suite, The ISO Model.

Introduction to physical layer: Data and Signals, Transmission impairment, Data rate limits, Performance, Transmission media: Introduction, Guided Media, Unguided Media, Switching: Introduction, Circuit Switched Networks, Packet switching.

UNIT II

Introduction to Data Link Layer: Introduction, Link layer addressing, Error detection and Correction: Cyclic codes, Checksum, Forward error correction, Data link control: DLC Services, Data link layer protocols, HDLC, Point to Point Protocol, Media Access control : Random Access, Controlled Access, Channelization, Connecting devices and virtual LANs: Connecting Devices.

UNIT III

The Network Layer: Network layer design issues, Routing algorithms, Congestion control algorithms, Quality of service, Internetworking, The network layer in the Internet: IPV4 Addresses, IPV6, Internet Control protocol, OSPF, BGP, IP, ICMPv4, IGMP.

UNIT IV

The Transport Layer: The Transport Service, Elements of Transport Protocols, Congestion Control, The internet transport protocols: UDP, TCP, Performance problems in computer networks, Network performance measurement.

UNIT V

Introduction to Application Layer: Introduction, Client Server Programming, WWW and HTTP, FTP, e-mail, TELNET, Secure Shell, Domain Name System, SNMP.

TEXT BOOKS:

1. “Data communications and networking” 5th edition, 2012, Behrouz A. Forouzan, TMH.
2. “Computer Networks”, 5th edition, 2010, Andrew S. Tanenbaum, Wetherall, Pearson.

REFERENCE BOOKS:

1. “Internetworking with TCP/IP – Principles, protocols, and architecture- Volume 1, Douglas E. Comer, 5th edition, PHI
2. “Computer Networks”, 5E, Peterson, Davie, Elsevier.
3. “Introduction to Computer Networks and Cyber Security”, Chawan- Hwa Wu, Irwin, CRC Publications.
4. “Computer Networks and Internets with Internet Applications”, Comer.

(14053103) SOFTWARE ENGINEERING

L T C
4 0 3

Course Objectives:

- To understand the software life cycle models.
- To understand the software requirements and SRS document.
- To understand the importance of modeling and modeling languages.
- To design and develop correct and robust software products.
- To understand the quality control and how to ensure good quality software.
- To understand the planning and estimation of software projects.
- To understand the implementation issues, validation and verification procedures.
- To understand the maintenance of software

UNIT I

Software and Software Engineering: The Nature of Software, The Unique Nature of WebApps, Software Engineering, Software Process, Software Engineering Practice, Software Myths.

Process Models: A Generic Process Model, Process Assessment and Improvement, Prescriptive Process Models, Specialized Process Models, The Unified Process, Personal and Team Process Models, Process Terminology, Product and Process.

UNIT II

Understanding Requirements: Requirements Engineering, Establishing the Groundwork, Eliciting Requirements, Developing Use Cases, Building the Requirements Model, Negotiating Requirements, Validating Requirements.

Requirements Modeling: Requirements Analysis, Scenario-Based Modeling, UML Models That Supplement the Use Case, Data Modeling Concepts, Class-Based Modeling.

UNIT III

Design Concepts: Design within the Context of Software Engineering, Design Process, Design Concepts, The Design Model.

Architectural Design: Software Architecture, Architectural Genres, Architectural Styles, Architectural Design.

Component-Level Design: What is a Component, Designing Class-Based Components, Conducting Component-Level Design, Component-Level Design for WebApps.

UNIT IV

User Interface Design: The Golden Rules, User Interface Analysis and Design, Interface Analysis, Interface Design Steps, Design Evaluation.

Coding and Testing: Coding, Code Review, Software Documentation, Testing, Testing in the Large versus Testing in the Small, Unit Testing, Black-Box Testing, White-Box Testing, Debugging, Program Analysis Tools, Integration Testing, Testing Object-Oriented Programs, System Testing, Some General Issues Associated with Testing.

UNIT V

Software Project Management: Responsibilities of a Software Project Manager, Project Planning, Metrics for Project Size Estimation, Project Estimation Techniques, Empirical Estimation Techniques, COCOMO-A Heuristic Estimation Technique, Halstead's Software Science-An Analytical Technique, Staffing Level Estimation, Scheduling, Organization and Team Structures, Staffing, Risk Management, Software Configuration Management. .

Software Maintenance: Characteristics of Software Maintenance, Software Reverse Engineering, Software Maintenance Process Models, Estimation of Maintenance cost.

TEXT BOOKS :

1. Software Engineering A practitioner's Approach, Roger S. Pressman, Seventh Edition, 2009, McGrawHill International Edition.
2. Fundamentals of Software Engineering, Rajib Mall, Third Edition, 2009, PHI.

REFERENCE BOOKS:

1. Software Engineering, Ian Sommerville, Ninth edition, Pearson education.
2. Software Engineering : A Primer, Waman S Jawadekar, Tata McGraw-Hill, 2008
3. Software Engineering, A Precise Approach, Pankaj Jalote, Wiley India,2010.
4. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
5. Software Engineering1: Abstraction and modeling, Diner Bjorner, Springer International edition, 2006.
6. Software Engineering2: Specification of systems and languages, Diner Bjorner, Springer International edition , 2006.
7. Software Engineering Foundations, Yingxu Wang, Auerbach Publications,2008.

8. Software Engineering Principles and Practice, Hans Van Vliet, 3rd edition, John Wiley & Sons Ltd.
9. Software Engineering 3: Domains, Requirements, and Software Design, D. Björner, Springer International Edition.
10. Introduction to Software Engineering, R.J. Leach, CRC Press.

(14053104) COMPILER DESIGN

L T C
3 1 3

Course Objectives:

- To understand the basic principles of the compiler, Compiler construction tools and lexical analysis.
- To understand the Concept of Context Free Grammars, Parsing and various Parsing Techniques.
- To understand the process of intermediate code generation.
- To understand the process of Code Generation.
- To understand various Code optimization techniques and runtime environment.

UNIT 1

Introduction to Compiling: Compilers, Analysis of the Source program. The phases of a compiler, the cousins of the Compiler. The grouping of phases, Compiler construction tools.

Lexical Analysis: The role of the analyzer. Input buffering, Specification of tokens, Recognition of tokens, A language for Specifying Lexical analyzer.

UNIT II

Syntax Analysis: The role of the parser, Context-free grammars, writing a grammar, Top-down parsing, Bottom-up parsing, Operator-precedence parsing, LR parsers. Using ambiguous grammars Parser generators.

UNIT III

Syntax Directed Translation: Syntax-directed definitions, Construction of syntax trees, Bottom-up evaluation of S-attributed definitions. L-attributed definitions. Top-down translations. Bottom-up evaluation of inherited attributes.

Type Checking: Type systems, Specification of simple type checker. Equivalence of type expressions, type conversions.

UNIT IV

Run-Time Environments: Source Language issues, storage organization, Storage-allocation strategies. Access to non local names. Symbol tables, Language facilities for dynamic storage allocation. Dynamic storage allocation techniques

Intermediate Code generation: Intermediate languages, Three address code, quadruple, triple and indirect triple.

UNIT V

Code Generation: Issues in the Design of a code generator, The target machine, Run-time storage management, Basic blocks and flow graphs, Next-use information. A simple code generator, Register allocation and assignment, DAG representation of basic blocks, peephole optimization.

Code Optimization: Introduction. The principle source of optimization.

TEXT BOOK:

1. Alfred V. Aho, Ravi Sethi, Jeffrey D. Ullman. Compilers-Principles, Techniques and Tools, Pearson Education 2004.

REFERENCE BOOKS:

1. Alfred V. Aho, Jeffrey D. Ullman, Principles of Compiler Design. Narosa Publications.
2. J.P.Benne, Introduction to Compiling Techniques, Second Edition, Tata McGraw-Hill.

(14053105) COMPUTER GRAPHICS

L T C
4 0 3

Course Objectives:

- To apply the rules and algorithms in generating graphical outputs.
- To develop multi-dimensional objects using suitable transformations.
- To Develop real-time rendering graphics.

UNIT I

Introduction: Usage of Graphics and their applications, Presentation Graphics- Computer Aided Design- Computer Art- Entertainment- Education and Training- Visualization- Image Processing- Graphical User Interfaces.

Overview of Graphics systems: Video Display Devices- Raster Scan systems-random scan systems-Graphics monitors and workstations-Input devices-hard copy devices- Graphics software.

UNIT II

Scan Converting Lines – Basic Incremental algorithm, Midpoint algorithm and additional issues; Scan converting Circles, Scan Converting Ellipses, Solid Filling, Pattern Filling, Thick Primitives, Cohen – Sutherland line clipping algorithm, Parametric line clipping algorithms, Sutherland – Hodgeman polygon clipping algorithm, Generating characters.

UNIT III

Geometrical transformations – 2D transformations, Homogeneous coordinates, Matrix representation of 2D transformations, Composition of 2D transformations, Window to view-port transformation, Matrix representation of 3D transformations, Composition of 3D transformations.

Representing Curves and Surfaces – Polygon meshes, Parametric cubic curves, Parametric bicubic surfaces and Quadratic surfaces.

UNIT IV

Viewing in 3D – Projections, Specifying an arbitrary 3D view.

Solid Modeling – Representing Solids, Regularized Boolean set operations, Primitive instancing, Sweep Representation, Boundary Representations, Spatial-Partitioning Representations.

Achromatic and Colored Light – Achromatic light, Chromatic color, Color models for raster graphics, Reproducing color, Using color in computer graphics.

UNIT V

Illumination Models – Ambient light, Diffuse reflection, Atmospheric attenuation.

Shading Models – Constant shading, Interpolated shading, Polygon mesh shading, Gouraud shading, Phong shading.

Animation – Conventional and Computer-Assisted animation, Animation languages, Methods of controlling animation, Basic rules of animation, Problems peculiar to animation.

TEXT BOOKS:

1. Foley, Van Dam, Feiner and Hughes, Computer Graphics – Principles and Practice, 2nd Edition in C, Pearson Education, 2004
2. Donald Hearn and M. Pauline Baker, Computer graphics, C version, Prentice – Hall, 1997.

REFERENCE BOOKS:

1. William M. Newman, Robert F. Sproull, Principles of interactive computer graphics, 12th Edition, McGraw – Hill, 1986
2. David F. Rogers, Rae A. Earnshaw, Computer Graphics Techniques : Theory and Practice, Springer-Verlag, 1990
3. Computer Graphics using Open GL by Francis S Hill Jr Pearson Education, 2004

(14143106) MICROPROCESSORS

L T C
4 0 3

Course Objectives:

- To learn the architecture and instruction set of 16 bit Microprocessors
- To learn the instruction set of 16 bit microprocessor and solve problems using the same

UNIT-I

Development of microprocessors 8086 microprocessors – Architecture, Pin configuration, Instruction set, Addressing modes, Interrupt system.

System timing of 8086 – clock cycle, machine cycle and instruction cycle, timing diagram for simple instructions, generation of delays.

UNIT-II

Assembler, Assembler directives, Assembly language programs (8086) with Assembler directives for addition, subtraction, multiplication, division etc., sorting and searching, bit manipulation, programs using look-up tables, stages of software development, modular programming, debugging and documentation.

UNIT-III

Data transfer schemes – Synchronous, Asynchronous, Interrupt driven and DMA type schemes, USART (8251) and its interfacing, Programmable interrupt controller (8259) and its interfacing, Programmable DMA controller and its interfacing, Data communication standards, RS – 232 Serial interface standard, IEEE – 488 GPIB standard.

UNIT-IV

Memory interfacing to 8086 – Interfacing various types of RAM and ROM chips, Address decoding techniques.

Interfacing ADC and DAC to 8086 systems, Data acquisition, Waveform generation, Traffic light controller, Stepper motor control, temperature measurement and control.

UNIT-V

Introduction to 80386 and 80486 microprocessors, different modes of operation – protected mode, virtual mode.

Introduction to Pentium processor – special Pentium registers, Pentium memory management, introduction to the Pentium pro– microprocessor.

TEXT BOOKS:

1. Barry B Brey: The INTEL Microprocessors 8086/8088, 80186/80188/80286, 80386, 80486, Pentium and Pentium processor, Architecture, Programming and Interfacing 4th edition (PHI).
2. Hall Douglas V. Microprocessor and Interfacing TMH.
3. Ram B : Fundamentals of Microprocessors and Micro Computers, Dhanpat Rai & sons.
4. Mukhopadhyay, Microprocessor, Microcomputer and their Applications, Narosa Publishing House.
5. J.Uffembeqe, the 8086/8088 family – Design, Programming and Interfacing, PHI.

III B.Tech. I Sem

(14253107) HUMAN VALUES & PROFESSIONAL ETHICS

L	T	C
2	0	0

Course Objective:

- This course deals with professional ethics which includes moral issues and virtues, social responsibilities of an engineer right qualities of moral Leadership.

UNIT I

ENGINEERING ETHICS

Senses of Engineering Ethics – Variety of Moral issues – Types of inquiry – Moral Dilemmas – Moral Autonomy – Kohlberg’s Theory – Consensus and Controversy – Professions and Professionalism – Professional ideals and virtues.

UNIT II

ENGINEERING AS SOCIAL EXPERIMENTATION

Engineering as experimentation – Engineers as Responsible Experimenters – Research Ethics – Codes of Ethics – Industrial Standards – A Balanced Outlook on Law – The Challenger Case Study.

UNIT III

ENGINEER’S RESPONSIBILITY FOR SAFETY

Safety and Risk – Assessment of Safety and Risk – Risk benefit Analysis – Reducing Risk – The Government Regulator’s Approach to Risk – Chernobyl Case and Bhopal Case studies.

UNIT IV

RESPONSIBILITIES AND RIGHTS

Collegiality and Loyalty – Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property (IPR) – Discrimination.

UNIT V

GLOBAL ISSUES

Multinational Corporations – Business Ethics – Environmental Ethics – Computer Ethics – Role in Technological Development – Weapons Development – Engineers as Managers – Consulting

Engineers – Engineers as Expert Witnesses and Advisors – Honesty – Leadership – Sample Code of conduct.

TEXT BOOKS :

1. Mike martin and Roland Schinzinger. “ Ethics in Engineering ”, McGrow Hill, New York 2005
2. Charles E Harris. Michael S Pritchard and Michael J Rabins. “ Engineering Ethics – Concepts and Cases ”, Thompson Learning 2000.

REFERENCE BOOKS :

1. Charles D Fleddermann, “ Engineering Ethics”, Prentice Hall, New Mexico, 1999.
2. John R Baatright. “Ethics and the Conduct of Business”, Pearson Education 2003.
3. Edmund G Seeabauer and Robert L Barry, “Fundamentals of Ethics for Scientists and Engineers”, Oxford University press 2001.
4. Prof. (Col) P S Bajaj and Dr. Raj Agrawal, “ Business Ethics – An Indian Perspective”, Biztantra, New Delhi, 2004.
5. David Ermann and Michele S Shauf, “ Computers, Ethics and Society”, Oxford University Press, 2003.

**(14053108) COMPUTER NETWORKS &
OPERATING SYSTEMS LAB**

L P C
0 3 2

Course Objectives:

- This course should enable the students to understand and simulate the behaviour of network environment.
- This course should enable the students to understand OS concepts.

Computer Networks Lab Experiments:

1. Implementation of Character Stuffing
2. Implementation of Bit Stuffing
3. Implementation of Character Count
4. Implementation of Cyclic Redundancy Check
5. Implementation of Shortest Path Routing Algorithm

Operating Systems Lab Experiments:

1. Implementation of FCFS Scheduling Algorithm
2. Implementation of SJF Scheduling Algorithm
3. Implementation of round robin Scheduling Algorithm
4. Implementation of Priority Scheduling Algorithm
5. Implementation of LRU Page replacement
6. Simulate Bankers Algorithm for Dead Lock Avoidance
7. Simulate Bankers Algorithm for Dead Lock Prevention
8. Implementation of multiple variable partition technique
9. Implementation of multiple fixed partition technique

(14043109) MICROPROCESSORS LAB

L P C
0 3 2

Course Objectives:

- To solve various problems using microprocessor kits and assembly language
- To study the interface circuits to microprocessors.

LIST OF EXPERIMENTS:

GENERAL PROBLEMS

1. Addition and Subtraction of two 8-bit/16 bit numbers
2. Multiplication of two 8-bit & two 16-bit numbers
3. Division of 16-bit by 8-bit and 32-bit by 16-bit number
4. Interchange of two data words using 'xchg' instruction.
5. Interchange of 10-data bytes with another 10-data bytes of another location.
6. Addition of 6 data bytes with 6-data bytes of another location.
7. Counting of 0's and 1's in a given data.
8. Check the given number is logical palindrome or not.
9. Finding the maximum and minimum numbers in a given string of data.
10. Sorting the given numbers in ascending and descending order.
11. Conversion of bcd to hexadecimal number.
12. Multiplication of two 3x3 matrices.

INTERFACING

1. Dual dac interface (waveform generation).
2. Stepper motor control.
3. Display of flags using logic controller.
4. Traffic light controller.

III B.Tech. II Sem

(14053201) OBJECT ORIENTED ANALYSIS & DESIGN

L	T	C
3	1	3

Course Objectives:

- To understand the Object oriented life cycle.
- To know how to identify objects, relationships, Services and attributes through UML.
- To understand different UML diagrams.
- To know object oriented design process, software quality and usability.

UNIT I

Introduction to UML: Importance of Modeling, Principles of Modeling, Object Oriented Modeling, Conceptual Model of the UML, Architecture.

UNIT II

Basic Structural Modeling : Classes, Relationships, Common Mechanisms, and Diagrams
Advanced Structural Modeling : Advanced Classes, Advanced Relationships, Interfaces, Types and Roles, Packages.

Class and Object Diagrams : Terms, Concepts, Modeling Techniques for Class and Object Diagrams.

UNIT III

Basic Behavioral Modeling-I : Interactions, Interaction Diagrams.

Basic Behavioral Modeling-II : Use Cases, Use Case Diagrams, Activity Diagrams.

UNIT IV

Advanced Behavioral Modeling : Events and Signals, State Machines, Processes and Threads, Time and Space, State Chart Diagrams.

UNIT V

Architectural Modeling : Component, Deployment, Component Diagrams and Deployment Diagrams, Systems and Models.

Artifact Diagrams.

Case Study : The Unified Library Application.

TEXT BOOKS:

1. The Unified Modeling Language User Guide, Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education.
2. UML 2 Toolkit, Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, WILEY-Dreamtech India Pvt. Ltd.

REFERENCES:

1. Fundamentals of Object Oriented Design in UML, Meilir Page- Jones, Pearson Education.
2. Modeling Software Systems Using UML2, Pascal Roques, Wiley- Dreamtech India Pvt. Ltd.
3. Object Oriented Analysis and Design, Atul Kahate, The McGraw- Hill Companies.
4. Object-Oriented Analysis and Design with the Unified Process, John W. Satzinger, Robert B Jackson and Stephen D Burd, Cengage Learning.
5. Learning UML 2.0, Russ Miles and Kim Hamilton, O'Reilly, SPD.
6. Applying UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education.
7. UML and C++, R.C.Lee and W.M.Tepfenhart, PHI.
8. Object Oriented Analysis, Design and Implementation, B.Dathan and S.Ramnath, Universities Press.
9. OO Design with UML and Java, K.Barclay, J.Savage, Elsevier.
10. Mark Priestley: Practical Object-Oriented Design with UML, TMH.

III B.Tech. II Sem

(14053102) DESIGN AND ANALYSIS OF ALGORITHMS

L	T	C
3	1	3

Course Objectives:

- To introduce the basic concepts of algorithms.
- To introduce the mathematical aspects and analysis of algorithms.
- To introduce sorting and searching algorithms.
- To introduce various algorithmic techniques.
- To introduce algorithm design methods.

UNIT-I

Introduction: Algorithm, Performance analysis.

Asymptotic Notations: Big Oh Notation, Omega Notation, Theta Notation, Little Oh Notation, Basic efficiency classes, Performance Measurement.

Brute Force Method: Selection sort, Bubble sort, Sequential search, Brute force string matching.

UNIT-II

Divide-and Conquer: The general method, Binary search, Finding the maximum and minimum, Merge sort, quick sort, Strassen's matrix multiplication.

Greedy Method: The general method, Knapsack problem, Job sequencing with deadlines, Minimum Spanning trees, Huffman codes.

UNIT-III

Dynamic Programming: Multistage graph, Single source shortest path, All Pair Shortest Path, Optimal Binary Search trees, 0/1 Knapsack, Reliability Design, Traveling Salesman Problem.

UNIT-IV

Search and Traversal techniques: Techniques for binary tree, Techniques for Graphs, Connected components and spanning tree, Biconnected components and DFS.

Backtracking: The general method, 8-Queens Problem, sum of subsets, Graph Coloring, Hamilton cycles.

UNIT-V

Branch and Bounds: General method, 0/1 Knapsack, LC Branch and Bound solution FIFO Branch and Bound solution, Traveling salesperson problem.

Limitations of Algorithm power: Lower bound arguments, decision trees, P, NP.

NP-Hard and NP-Completeness: Basic concepts, Nondeterministic algorithms, The Classes –NP – hard and NP complete, Cook's theorem.

TEXT BOOKS:

1. Horowitz E. Sahani S and Rajasekaran S: "Fundamentals of Computer Algorithm", Galgotia Publications.
2. Anany Levitin, "Introduction to the Design & Analysis, of Algorithms", Pearson Education, 2000.

REFERENCE BOOKS:

1. Aho, Hopcroft, Ulman, "The Design and Analysis of Computer Algorithm", Pearson Education, 2000.
2. Parag H. Dave, Himanshu B. Dave "Design and Analysis of Algorithms" Pearson Education, 2008.
3. Cormen T H, Leiserson C.E, Rivest R.L, and Stein C, Introduction to Algorithms, 2nd edition, Prentice –Hall of India, 2001.
4. R.c.T. Lee, S.S.Tseng, R.C.Chang and T.Tsai, Introduction to Design and analysis of Algorithms A strategic approach, MC Graw Hill.

(14053203) WEB TECHNOLOGIES

L T C
3 1 3

Course Objectives:

- Learn to access data bases using java
- Learn to communicate over a network using java
- Learn do design server side programs and access them from client side

UNIT I

Introduction to Web Technologies: Introduction to Web servers like Apache1.1,IIS XAMPP(Bundle Server), WAMP(Bundle Server), Handling HTTP Request and Response, installations of above servers.

UNIT II

HTML Common tags: List, Tables, images, forms, Frames; Cascading Style sheets;

Introduction to Java Script: Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script.

UNIT III

Overview of PHP Data types and Concepts: Variables and data types, Operators, Expressions and Statements, Strings, Arrays and Functions.

Overview of Classes, Objects, and Interfaces: Creating instances using Constructors, Controlling access to class members, Extending classes, Abstract classes and methods, using interfaces, Using class destructors, File Handling and Using Exceptions.

UNIT IV

PHP Advanced Concepts: Using Cookies, Using HTTP Headers, Using Sessions, Authenticating users, Using Environment and Configuration variables, Working with Date and Time.

UNIT V

Using Creating and Forms: Understanding Common Form Issues, GET vs. POST, Validating form input, Working with multiple forms, and Preventing Multiple Submissions of a form.

PHP and Database Access: Basic Database Concepts, Connecting to a MYSQL database, Retrieving and Displaying results, Modifying, Updating and Deleting data. MVC architecture.

TEXT BOOKS:

1. Beginning PHP and MySQL, 3rd Edition , Jason Gilmore, Apress Publications (Dream tech.).
2. PHP 5 Recipes A problem Solution Approach Lee Babin, Nathan A Good, Frank M.Kromann and Jon Stephens.
3. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech.

REFERENCE BOOKS:

1. Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP, J.Lee and B.Ware(Addison Wesley) Pearson Education.
2. PHP 6 Fast and Easy Web Development, Julie Meloni and Matt Telles, Cengage Learning Publications.
3. PHP 5.1, I. Bayross and S.Shah, The X Team, SPD.
4. PHP and MySQL by Example, E.Quigley, Prentice Hall (Pearson).
PHP Programming solutions, V.Vaswani, TMH.

III B.Tech. II Sem

(14053204) UNIX INTERNALS AND SHELL PROGRAMMING

L	T	C
3	1	3

Course Objectives:

- To provide overview of unix operating system and its architecture.
- To provide an adequate idea on internal representation of files and system calls.
- To introduce shell programming.

UNIT I

Introduction to the kernel: - Architecture of the UNIX, The buffer cache.

Internal representation of files:- Inodes, accessing blocks, releasing blocks, structure of regular files, conversion of a path name to an Inode, Inode assignment to a new file, allocation of disk-block.

UNIT II

System calls for the file systems: - Open, Read, Write, and Close.

PIPES:-the pipe system call, opening a named pipes, reading and writing pipes, closing pipes, DUP, mounting and amounting file system, LINK, UNLINK. System call for TIME and CLOCK.

UNIT III

The structure of processes: - process states and transitions, layout of system memory, the context of a process, saving the context of the process, manipulation of the process address space.

Process Control: - process creation, signals, process termination, awaiting process termination, the user id of a process, changing the size of the process, the system BOOT and INIT process

UNIT IV

Shell Programming: - Study of different types of Shell like C Shell, Bourne Shell etc. Shell variable, Shell Script, Shell Command.

Looping and Making choices: - For Loop, While and Until, Passing Arguments to Scripts. Programming in different shells.

UNIT V

Inter Process Communication: - Process Tracing, Network Communication, Sockets.

Multiprocessor System: - Problem of multiprocessor systems, Solution with Master and Slave Processor, Solution with Semaphores.

TEXT BOOKS:

1. The Design of Unix Operating System by Maurice J Bach, Prentice Hall of India, 1991.
2. Advanced UNIX: A Programmer Guide by Stephen Prata, Howard W. Sams, 1987.

REFERENCE BOOKS:

1. William Stallings, Operating Systems: Internals and Design principles, Fifth Edition, Prentice Hall, 2005.
2. Understanding the LINUX Kernel, Daniel P. Bovet and Marco ceasti, O'RELLY publications, 2005.

III B.Tech. II Sem

(14053205) ARTIFICIAL INTELLIGENCE

L	T	C
4	0	3

Course Objectives:

- To understand how a computer making intelligent decisions.
- To understand the searching techniques
- To know the knowledge representation and learning
- To enable the students to apply these techniques in application which involve perception, reasoning and learning
- To know the features of expert systems.

UNIT I

Introduction to Artificial Intelligence; Problem, Problem Spaces and Search; Heuristic Search Techniques.

UNIT II

Knowledge Representation Issues, Predicate Logic, Representing Knowledge using Rules.

UNIT III

Symbolic Reasoning under Uncertainty, Statistical Reasoning.

UNIT IV

Weak Slot-and-Filler Structures, Strong Slot-and-Filler Structures, Knowledge Representation Summary.

UNIT V

Game Playing, Natural Language Processing, Expert Systems

TEXT BOOKS:

1. Elain Rich, Kevin Knight and Shivashankar B Nair, Artificial Intelligence, 3rd Edition, Tata McGraw Hill, 2009.

REFERENCE BOOKS:

1. Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, 2nd Edition, Pearson Education, 2003.
2. Padhy N P, Artificial Intelligence and Intelligent Systems, Oxford University Press, 2005.

III B.Tech. II Sem

**(14053206) WIRELESS SENSOR NETWORKS
(ELECTIVE-I)**

**L T C
4 0 3**

Course Objectives:

- Realize the challenges of wireless sensor networks.
- Learn the architecture of WSN
- Understand the networking of sensors to form the network.
- Understand the infrastructure of WSN.
- Learn programming of wireless sensor networks.

UNIT I

WLAN: Infrared vs. RadioTransmission, Infrastructure and Ad Hoc Networks, IEEE 802.11.
Bluetooth: User Scenarios, Physical Layer,MAC layer, Networking, Security, LinkManagement.
GSM: Mobile Services, System Architecture, RadioInterface, Protocols, Localization and calling, Handover, Security, and New Data Services.

UNIT II

MobileComputing (MC): Introduction to MC, Novel Applications, Limitations and Architecture.
Motivation for a Specialized MAC (Hidden and Exposed Terminals, Near and Far Terminals),
SDMA, FDMA, TDMA, CDMA.
IP and Mobile IP Network Layers, Packet Delivery and HandoverManagement, Location Management, Registration, Tunneling and Encapsulation, Route Optimization.

UNIT III

Basics of Wireless Sensors and Applications, The Mica Mote, Sensing and Communication Range, Design Issues, Energy consumption, Clustering of Sensors, Applications.
Data Retrieval in Sensor Networks, Classification of WSNs, MAC layer, Routing layer, High-level application layer support, Adapting to the inherent dynamic nature of WSNs.

UNIT IV

Sensor Network Platforms and Tools, Sensor Network Hardware,Sensor Network Programming Challenges, Node-Level Software Platforms.

UNIT V

Operating System – TinyOS, Imperative Language: nesC, Dataflow style language: TinyGALS, Node-Level Simulators, ns-2 and its sensor network extension, TOSSIM.

TEXT BOOKS:

1. Raj Kamal, Mobile Computing, Oxford University Press, 2007,ISBN: 0195686772
2. Jochen Schiller, Mobile Communications, Addison-Wesley, Second Edition, 2004
3. Ad Hoc and Sensor Networks – Theory and Applications, Carlos Corderio Dharma P.Aggarwal, World Scientific Publications /Cambridge University Press, March 2006
4. Wireless Sensor Networks: An Information Processing Approach,Feng Zhao, Leonidas Guibas, Elsevier Science imprint, Morgan Kauffman Publishers, 2005, rp2009

REFERENCES:

1. Adhoc Wireless Networks – Architectures and Protocols, C.Siva Ram Murthy, B.S.Murthy, Pearson Education, 2004
2. Wireless Sensor Networks – Principles and Practice, Fei Hu,Xiaojun Cao, An Auerbach book, CRC Press, Taylor & Francis Group, 2010
3. Wireless Ad hoc Mobile Wireless Networks – Principles, Protocols and Applications, Subir Kumar Sarkar, et al., Auerbach Publications, Taylor & Francis Group, 2008.
4. Ad hoc Networking, Charles E.Perkins, Pearson Education, 2001.
5. Wireless Ad hoc Networking, Shih-Lin Wu, Yu-Chee Tseng,Auerbach Publications, Taylor & Francis Group, 2007
6. Wireless Ad hoc and Sensor Networks – Protocols, Performance and Control, Jagannathan Sarangapani, CRC Press, Taylor & Francis Group, 2007, rp 2010.
7. Security in Ad hoc and Sensor Networks, Raheem Beyah, et al.,World Scientific Publications / Cambridge University Press, 2010
8. Ad hoc Wireless Networks – A communication-theoretic perspective, Ozan K.Tonguz, Gialuigi Ferrari, Wiley India,2006,rp2009.
9. Wireless Sensor Networks – Signal processing and communications perspectives, Ananthram Swami, et al., Wiley India, 2007, rp2009.

III BTech. II Sem

**(14053207) ADVANCED COMPUTER ARCHITECTURE
(ELECTIVE-III)**

L T C
4 0 3

Course Objectives:

- Discuss the concept of parallel processing and the relationship between parallelism and performance
- Understand the organization of computer structures that can be electronically configured and reconfigured
- Discuss the performance advantages that multithreading can offer along with the factors that make it difficult to derive maximum benefits from this approach

UNIT I

Parallel Computer Models - The State of Computing, Multiprocessors and Multicomputer, Multivector and SIMD Computers, PRAM and VLSI Models, Architectural Development Tracks.

Program and Network Properties - Conditions of Parallelism, Program Partitioning and Scheduling, Program Flow Mechanisms, System Interconnect Architectures.

UNIT II

Principles of Scalable Performance - Performance Metrics and Measures, Parallel Processing Applications, Speedup Performance Laws, Scalability Analysis and Approaches.

Multiprocessors and Multicomputers - Multiprocessor System Interconnects, Cache Coherence and Synchronization Mechanisms, Three Generations of Multicomputers, Message-Passing Mechanisms.

UNIT III

Multivector and SIMD Computers - Vector Processing Principles, Multivector Multiprocessors, Compound Vector Processing, SIMD Computer Organizations, The Connection Machine CM-5.

UNIT IV

Scalable, Multithreaded, and Dataflow Architectures - Latency-Hiding Techniques, Principles of Multithreading, Fine-Grain Multicomputers, Scalable and Multithreaded Architectures, Dataflow and Hybrid Architectures.

UNIT V

Parallel Models, Languages, and Compilers - Parallel Programming Models, Parallel Languages and Compilers, Dependence Analysis of Data Arrays, Code Optimization and Scheduling, Loop Parallelization and Pipelining.

Parallel Program Development and Environments - Parallel Programming Environments, Synchronization and Multiprocessing Modes, Shared-Variable Program Structures, Message-Passing Program Development, Mapping Programs onto Multicomputers.

TEXT BOOK:

1. Kai Hwang, ADVANCED COMPUTER ARCHITECTURE: Parallelism, Scalability, Programmability, McGraw - Hill, Inc.2001.

REFERENCE BOOK:

1. M J Quinn, Designing efficient algorithms for parallel computers, McGraw-Hill, Inc.

(14053208) MULTIMEDIA SYSTEMS
(ELECTIVE-1)

L T C
4 0 3

Course Objectives:

- To adapt the architecture for design of multimedia system.
- To solve issues related to multimedia file handling.
- To adopt hypermedia standards in developing multimedia applications.
- Know the basics of creating multimedia applications.

UNIT I

Multimedia: Definition, Where to use multimedia, Medium, Main properties of multimedia system, Traditional data stream characteristics, Data stream characteristics for continuous media, Information units, **Sound/Audio:** Basic sound concepts, Music, Speech, **Images/Graphics:** Basic concepts, Computer image processing.

UNIT II

Video and Animation: Basic concepts, Television, Computer based animation, **Data Compression:** Storage space, Coding requirements, Source, Entropy and Hybrid coding, Some basic compression techniques, JPEG, H.261,(Px64), MPEG, DVI.

UNIT III

Computer Technology: Communication Architecture, Multimedia Workstation, **Multimedia Operating Systems:** Introduction, Real time, Resource management, Process management, **Multimedia Communication systems:** Application Subsystem, Transport subsystem.

UNIT IV

Database Systems: Multimedia Database Management System, Characteristics of an MDBMS, Data Analysis, Data Structure, Operations on data, Integration in a Database model, **Documents, Hypertext and MHEG:** Documents, Hypertext and Hypermedia, Document Architecture ODA, MHEG.

UNIT V

Synchronization: Introduction, Notion of Synchronization, Presentation requirements, Reference model for multimedia synchronization, Synchronization specifications, **Multimedia Applications:** Introduction, Media Presentation, Media Composition, Media Integration, Media Communication, Media Consumption, and Media Entertainment.

TEXT BOOKS :

1. “ Multimedia: Computing, Communications and Applications”, Ralf Steinmetz and Klara Nahrstedt, Pearson Education.
2. “Multimedia: Making It work:”, Tay Vaughan, Pearson Education.

REFERENCE BOOKS:

1. “ Multimedia System design “, Prabhat K. Andheigh, Kiran Thakrar, THM
2. “ Multimedia Systems”, Koegel Buford, Pearson Education
3. “ Fundamentals of Multimedia , Ze-Nian Li, Mark.S.Drew
4. “ Multimedia Communication Systems: Techniques, standards and networks,
K.R.Rao,D.Milovanovic

III B.Tech. II Sem

**(14243209) ADVANCED ENGLISH & COMMUNICATION
SKILLS LAB**

L P C
0 3 2

Course Objectives:

This Lab focuses on using multi-media instruction for language development to met the following targets:

- To improve the students 'fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
- Further, they would be required to communicate their ideas relevantly and coherently in writing.
- To prepare all the students for their placements.

I. Language Lab Syllabus

1. Listening Skills
2. Communication Skills – Reading Comprehension
3. Group Discussion
4. Interview Skills
5. Resume Writing
6. Technical Report Writing & Project Report

II. Communication Skills Lab Syllabus

1. Self – Introduction
2. Individual presentation (or) Elocution (or) Oral Presentation
3. Seminar – General or Technical Topics
4. Mock Group Discussion
5. Mock Interviews
6. Power Point Presentations.

Suggested Software - Globarena

(14053210) WEBTECHNOLOGIES LAB

L P C
0 3 2

Course Objectives:

The course should enable the student to create programs to demonstrate the skills

learned in Web Technology such as

- Internet applications.
- Create applications using HTML, DHTML,
- Write scripts using CSS and Java Script.
- Develop applications using Servlets.

HARDWARE AND SOFTWARE REQUIRED:

1. A working computer system with either Windows or Linux
2. A web browser either IE or Firefox
3. Apache web server or IIS Web server
4. XML editor like Altova Xml-spy [www.Altova.com/XMLSpy – free], Stylus studio, etc.,
5. A database either Mysql or Oracle
6. JVM (Java virtual machine) must be installed on your system
7. BDK (Bean development kit) must be also be installed

LIST OF EXPERIMENTS

1. Write a program in HTML to display different styles of heading text.
2. Write a program to display the processes to be followed for a patient when he enters for a complete checkup. Use ordered lists and unordered lists.
3. Write a program to display a traditional Newspaper with the use of table tags.
4. With the help of “IMAGE” tags write a program to display the image along with some contents.
5. Use “Anchor” tag to write a program for displaying various Menus.
6. Design the following static web pages required for an online book store web site.

1) HOME PAGE:

The static home page must contain three **frames**.

Top frame: Logo and the college name and links to Home page, Login page, Registration page, Catalogue page and Cart page (the description of these pages will be given below).

Left frame: At least four links for navigation, which will display the catalogue of respective links. For e.g.: When you click the link —CSE|| the catalogue for CSE Books should be displayed in the Right frame.

Right frame: The pages to the links in the left frame must be loaded. Validate the registration, user login pages using JavaScript.

2) LOGIN PAGE

3) CATOLOGUE PAGE

The catalogue page should contain the details of all the books available in the web site in a table.

The details should contain the following:

1. Snap shot of Cover Page.
2. Author Name.
3. Publisher.
4. Price.
5. Add to cart button.

4) CART PAGE

The cart page contains the details about the books which are added to the cart.

5) REGISTRATION PAGE:

Create a —registration form —with the following fields

- 1) Name (Text field)
- 2) Password (password field)
- 3) E-mail id (text field)
- 4) Phone number (text field)
- 5) Sex (radio button)
- 6) Date of birth (3 select boxes)

7) Languages known (check boxes – English, Telugu, Hindi, Tamil)

8) Address (text area)

7. Write *JavaScript* to validate the following fields of the above registration page.

1. Name (Name should contains alphabets and the length should not be less than 6 characters).

2. Password (Password should not be less than 6 characters length).

3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)

4. Phone number (Phone number should contain 10 digits only).

8. Design a web page using **CSS (Cascading Style Sheets)** which includes the following:

1) Use different font, styles:

In the style definition you define how each selector should work (font, color etc.).

Then, in the body of your pages, you refer to these selectors to activate the styles.

2) Set a background image for both the page and single elements on the page.

3) Control the repetition of the image with the background-repeat property. As background-repeat: repeat Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.

4) Define styles for links as

A:link

A:visited

A:active

A:hover

5) Work with layers

9. Write an XML file which will display the Book information which includes the following:

1) Title of the book

2) Author Name

3) ISBN number

4) Publisher name

5) Edition

6) Price

Write a Document Type Definition (DTD) to validate the above XML file.

Display the XML file as follows.

The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns. Use XML schemas XSL and CSS for the above purpose.

10. Create a simple visual bean with a area filled with a color. The shape of the area depends on the property shape. If it is set to true then the shape of the area is Square and it is Circle, if it is false. The color of the area should be changed dynamically for every mouse click.

11. Install IIS web server and APACHE.

While installation assign port number 4040 to IIS and 8080 to APACHE. Make sure that these ports are available i.e., no other process is using this port.

Access the above developed static web pages for books web site, using these servers by putting the web pages developed in program-6.

12. User Authentication :

Assume four users user1, user2, user3 and user4 having the passwords pwd1, pwd2, pwd3 and pwd4 respectively. Write a PHP for doing the following.

1. Create a Cookie and add these four user id's and passwords to this Cookie.

2. Read the user id and passwords entered in the Login form (program 6) and authenticate with the values (user id and passwords) available in the cookies.

If he is a valid user (i.e., user-name and password match) you should welcome him by name (user-name) else you should display — you are not an authenticated user “. Use init-parameters to do this.

13. Install a database (Mysql or Oracle).

Create a table which should contain at least the following fields: name, password, email-id, phone number (these should hold the data from the registration form).

Write a PHP program to connect to that database and extract data from the tables and display them. Experiment with various SQL queries.

Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page

14. Write a PHP which does the following job:

Insert the details of the 3 or 4 users who register with the web site by using registration. Authenticate the user when he submits the login form using the user name and password from the database.

IV BTech. I Sem

(14254101) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

L T C
4 0 3

Course Objectives:

1. To equip the budding engineering student with an understanding of concepts and tools of economic analysis.
2. Provide knowledge of managerial economics through differential economics concepts, accounting concepts are necessary to analyze and solve complex problems relating financial related matters in big industries.
3. An understanding of professional and ethical responsibility and ability to communicate effectively.
4. The broad education necessary to understand the impact of engineering solutions in a global and societal context.
5. Recognition of the need for, and an ability to engage in life-long learning and to meet contemporary issues.

UNIT I

MANAGERIAL ECONOMICS AND DEMAND ANALYSIS:

Definition, Nature and Scope of Managerial Economics- relation with other disciplines. Demand analysis – Determinants, Law of Demand and its exceptions – Elasticity of Demand – Types and Measurement of Elasticity of Demand – Methods of Demand Forecasting.

UNIT II

THEORY OF PRODUCTION AND COST ANALYSIS:

Production Function – Isoquants and Isocost, MRTS, least cost combination of inputs, Cobb-Douglas production function, laws of returns, internal and external economies of scale.

Cost Analysis: Cost concepts and classification. Break-Even Analysis (BEA), determination of Break Even Point – Managerial significance and limitation of BEA.

UNIT III

INTRODUCTION TO MARKET AND PRICING POLICIES:

Markets Structures: Types of competition, features of perfect competition, Monopoly, Monopolistic competition. Price- Output determination under perfect competition and monopoly – Methods of pricing – cost plus pricing, marginal cost, limit pricing, skimming pricing, bundling pricing, sealed bid pricing and peak load pricing.

UNIT – IV

BUSINESS ORGINATIONS AND CAPITAL BUDGETING:

Characteristic features of business, features of Sole Proprietorship, Partnership, Joint Stock Company and Public Enterprises. Changing business environment in post- liberalization scenario.

Capital: Significance, Types, Method and Sources and raising finance – Capital Budgeting Methods – Pay back Method, Accounting Rate of return (ARR) and Net Present Value Method (simple problems).

UNIT – V

FINANCIAL ACCOUNTING AND ANALYSIS:

Double Entry Book keeping, Journal, Ledger, Trail Balance – Final Accounts (Trading, Profit and loss Account and Balance sheet with simple adjustments) – Analysis and interpretation of financial statements through Liquidity, Profitability and Capital structure Ratios.

TEXT BOOKS:

1. Aryasri: Managerial Economics and Financial Analysis, 4/e, TMH, 2009.
2. Varshney & Maheswari: Managerial Economics, sultan chand, 2009.

REFERENCE BOOKS:

1. Premchand babu, Madan Mohan : Financial Accounting and Analysis, Himalaya,2009
2. Joseph G. Nellis and David parker: Principles of Business Economics, Pearson, 2/e, New Delhi.
3. M.Sugunatha Reddy: Managerial Economics and Financial Analysis, Research India Publication, New Delhi, 2013.

IV BTech. I Sem

(14054102) DATA WAREHOUSING AND DATA MINING

L	T	C
4	0	3

Course Objectives:

- This course helps the students to understand the overall architecture of a data warehouse and techniques and methods for data gathering and data pre-processing using **OLAP tools**. The different **data mining models** and techniques will be discussed in this course. Data mining and data warehousing applications in bioinformatics will also be explored.

UNIT I

Introduction: Why Data Mining? What Is Data Mining? What Kinds of Data Can Be Mined? What Kinds of Patterns Can Be Mined? Major issues in Data Mining.

Data Preprocessing: Data Cleaning, Data Integration, Data Reduction, Data Transformation and Data Discretization.

UNIT II

Data Warehousing and Online Analytical Processing: Basic Concepts, Data Warehouse Modeling: Data Cube and OLAP, Data Warehouse Design and Usage, Data Warehouse Implementation, Data Generalization by Attribute-Oriented Induction.

UNIT III

Mining Frequent Patterns, Associations, and Correlations: Basic Concepts and Methods: Basic Concepts, Frequent Itemset Mining Methods, From Association Analysis to Correlation Analysis, Pattern Mining in Multilevel, Multidimensional Space, Constraint-Based Frequent Pattern Mining

UNIT IV

Classification: Basic Concepts , Decision Tree Induction, Baye's Classification Method, Rule-Based Classification, Classification by Back propagation.

Prediction: Basic concepts, Accuracy and Error measures, Evaluating the accuracy of a classifier or a predictor.

UNIT V

Cluster Analysis: Cluster Analysis basic concepts, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods.

Outlier Detection - Outliers and Outlier Analysis, Outlier Detection Methods, Statistical Approaches .

TEXT BOOK:

1. Data Mining : Concepts and Techniques, Jiawei Han , Micheline Kamber and Jian Pei, Morgan Kaufmann Publishers, Elsevier, Third Edition, 2012.

REFERENCE BOOKS:

1. Data Mining Techniques, Arun K Pujari, Second Edition, Universities Press.
2. Data Warehousing in the Real world, Sam Aanhory & Dennis Murray , Pearson Education, Asia.
3. Insight into Data Mining, K.P.Soman, S.Diwakar , V.Ajay, PHI 2008

(14054103) CLOUD COMPUTING

L T C
4 0 3

Course Objectives:

- To explain the evolving computer model called cloud computing.
- To introduce the various levels of services that can be achieved by cloud computing.
- To describe the security aspects in cloud computing.

UNIT I

Systems Modeling, Clustering and Virtualization

Distributed System Models and Enabling Technologies, Computer Clusters for Scalable Parallel Computing, Virtual Machines and Virtualization of Clusters and Data centers.

UNIT II

Foundations

Introduction to Cloud Computing, Migrating into a Cloud, Enriching the ‘Integration as a Service’ Paradigm for the Cloud Era, The Enterprise Cloud Computing Paradigm.

UNIT III

Infrastructure as a Service (IAAS) & Platform and Software as a Service (PAAS / SAAS)

Virtual machines provisioning and Migration services, On the Management of Virtual machines for Cloud Infrastructures, Enhancing Cloud Computing Environments using a cluster as a Service, Secure Distributed Data Storage in Cloud Computing. Aneka, Comet Cloud, T-Systems’, Workflow Engine for Clouds, Understanding Scientific Applications for Cloud Environments.

UNIT IV

Monitoring, Management and Applications

An Architecture for Federated Cloud Computing, SLA Management in Cloud Computing, Performance Prediction for HPC on Clouds, Best Practices in Architecting Cloud Applications in the AWS cloud, Building Content Delivery networks using Clouds, Resource Cloud Mashups.

UNIT V

Governance and Case Studies

Organizational Readiness and Change management in the Cloud age, Data Security in the Cloud, Legal Issues in Cloud computing, Achieving Production Readiness for Cloud Services.

TEXT BOOKS:

1. Cloud Computing: Principles and Paradigms by Rajkumar Buyya, James Broberg and Andrzej M.Goscinski, 2011, Wiley.
2. Distributed and Cloud Computing, Kai Hwang, Geoffery C.Fox, Jack J.Dongarra, 2012, Elsevier.

REFERENCE BOOKS:

1. Cloud Computing: A Practical Approach, Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, Tata McGraw Hill, rp2011.
2. Enterprise Cloud Computing, Gautam Shroff, Cambridge University Press, 2010. 116
3. Cloud Computing: Implementation, Management and Security, John W. Rittinghouse, James F.Ransome, CRC Press, rp2012.
4. Cloud Application Architectures: Building Applications and Infrastructure in the Cloud, George Reese, O'Reilly, SPD, rp2011.
5. Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance, Tim Mather, Subra Kumaraswamy, Shahed Latif, O'Reilly, SPD, rp2011.

(14054104) SOFTWARE TESTING

L T C
4 0 3

Course Objectives:

- Basic software debugging methods.
- Various testing methodologies.
- The procedure for designing test cases.
- The significance of software testing

UNIT I

Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs.

Flow graphs and Path testing: path testing Basics, predicates, path predicates and Achievable paths, path sensitizing, path instrumentation, application of path testing.

UNIT II

Paths, Path products and Regular expressions: path products & path expression, reduction Procedure, regular expressions & flow anomaly detection.

Dataflow testing: Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

UNIT III

Domain Testing: domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and testability.

Logic Based Testing: overview, decision tables, path expressions, kv charts, specifications.

UNIT IV

State, State Graphs and Transition testing: state graphs, good & bad state graphs, state testing, Testability tips.

Transaction Flow Testing: transaction flows, transaction flow testing techniques.

UNIT V

Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools.

TEXT BOOKS:

1. Software Testing techniques, Boris Beizer, Dreamtech, Second Edition.
2. Software Testing Tools, Dr.K.V.K.K.Prasad, Dreamtech.

REFERENCE BOOKS:

1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing, Third Edition, P.C.Jorgensen, Aurbach Publications (Dist.by SPD).
3. Software Testing, N.Chauhan, Oxford University Press.
4. Introduction to Software Testing, P.Ammann and J.Offutt, Cambridge Univ. Press.
5. Effective methods of Software Testing, Perry, John Wiley, Second Edition, 1999.
6. Software Testing Concepts and Tools, P.Nageswara Rao, Dreamtech Press.
7. Software Testing, M.G.Limaye, TMH.
8. Software Testing, Desikan, G.Ramesh, Pearson.
9. Foundations of Software Testing, D.Graham and Others, Cengage Learning.
10. Foundations of Software Testing, A.P.Mathur, Pearson.

IV BTech. I Sem

**(14054105) SOFTWARE PROJECT MANAGEMENT
(ELECTIVE-II)**

L T C
4 0 3

Course Objectives:

The main goal of software development projects is to create a software system with a predetermined functionality and quality in a given time frame and with given costs. For achieving this goal, models are required for determining target values and for continuously controlling these values. This course focuses on principles, techniques, methods & tools for model-based management of software projects, assurance of product quality and process adherence (quality assurance), as well as experience-based creation & improvement of models (process management). The goals of the course can be characterized as follows:

- Understanding the specific roles within a software organization as related to project and process management.
- Describe the principles, techniques, methods & tools for model-based management of software projects, assurance of product quality and process adherence (quality assurance), as well as experience-based creation & improvement of models (process management).
- Understanding the basic infrastructure competences (e.g., process modeling and measurement)
- Understanding the basic steps of project planning, project management, quality assurance, and
- process management and their relationships

UNIT I

Conventional Software Management: The waterfall model, conventional software Management performance.

Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.

UNIT II

The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

Life cycle phases: Engineering and production stages, Inception, Elaboration, Construction, Transition phases.

Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, pragmatic artifacts.

Model based software architectures: A Management perspective and technical perspective.

UNIT III

Work Flows of the process: Software process workflows, Iteration workflows.

Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments.

Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

UNIT IV

Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building blocks, The Project Environment.

Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

UNIT V

Tailoring the Process: Process discriminates.

Future Software Project Management: Modern Project Profiles, Next generation Software economics, modern process transitions.

Case Study: The command Center Processing and Display system- Replacement (CCPDS-R).

Process Improvement and Mapping to the CMM.

TEXT BOOK:

1. Software Project Management, Walker Royce: Pearson Education, 2005.

REFERENCE BOOKS :

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw-Hill Edition.

2. Software Project Management, Joel Henry, Pearson Education.

3. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005.

4. Software Project Management, Shere K.D, 1998,PHI.

**(14054106) DIGITAL IMAGE PROCESSING
(ELECTIVE-II)**

L T C
4 0 3

Course Objectives:

- Develop an overview of the field of image processing.
- Understand the Image segmentation, enhancement, compression etc., approaches and how to implement them.
- Prepare to read the current image processing research literature.
- Gain experience in applying image processing algorithms to real problems.

UNIT I

Introduction, Digital Image and its properties – Basic concepts, Image Digitization, Digital Image properties Data structures for Image analysis-Levels of image data representation, Traditional image data structures, Hierarchical structures.

UNIT II

Image Preprocessing – Pixel brightness transformations, Geometric transformation.

Image Restoration -- A Model of Restoration Process, Noise Models, Restoration in the presence of Noise only-Spatial Filtering – Mean Filters: Arithmetic Mean filter, Geometric Mean Filter, Order Statistic Filters – Median Filter, Max and Min filters; Periodic Noise Reduction by Frequency Domain Filtering – Bandpass Filters; Minimum Mean-square Error Restoration.

UNIT III

Color Image Processing -- Color Fundamentals, Color Models, Converting Colors to different models, Color Transformation, Smoothing and Sharpening, Color Segmentation

Morphological Image Processing -- Introduction, Logic Operations involving Binary Images, Dilation and Erosion, Opening and Closing, Morphological Algorithms – Boundary Extraction, Region Filling, Extraction of Connected Components, Convex Hull, Thinning, Thickening

UNIT IV

Segmentation - Introduction, Region Extraction, Pixel-Based Approach, Multi-level Thresholding, Local Thresholding, Region-based Approach, Edge and Line Detection: Edge Detection, Edge Operators, Pattern Fitting Approach, Edge Linking and Edge Following, Edge

Elements Extraction by Thresholding, Edge Detector Performance, Line Detection, Corner Detection.

UNIT V

Linear discrete image transforms – basic theory, fourier transform, Hadamard transform, Discrete cosine transform, Wavelets, Applications of discrete image transforms.

Image data compression – Image data properties, Discrete image transform in image data compression, predictive compression methods, Vector quantization, hierarchical and progressive compression methods, Comparison of compression methods, JPEG and MPEG image compression.

TEXT BOOKS:

1. Milan Sonka, Vaclav Hlavac and Roger Boyle, Image processing, Analysis and Machine Vision, Second Edition, Thomson, Vikas Publishing House.
2. Digital Image Processing 2nd Edition, Rafael C. Gonzalvez and Richard E. Woods.
Published by: Pearson Education.

REFERENCE BOOKS:

1. Digital Image Processing and Computer Vision, R.J. Schalkoff. Published by: John Wiley and Sons, NY.
2. Fundamentals of Digital Image Processing, A.K. Jain. Published by Prentice Hall, Upper Saddle River, NJ

IV BTech. I Sem

**(14054107) SOFTWARE ARCHITECTURE
(ELECTIVE-II)**

**L T C
4 0 3**

Course Objectives:

- To understand interrelationships, principles and guidelines governing architecture and evolution over time.
- To understand various architectural styles of software systems.

UNIT I

Introduction To Software Architecture: An Engineering Discipline for Software, Status of S/W Arch. Architecture Business Cycle, Where do Architectures Come from. Software Processes and the Architecture Business Cycle, Features of Good Architecture.

UNIT II

Architecture Styles: Pipes and Filters, Data Abstraction and Object Oriented organization, Even-based Implicit Invocation, Layered Systems, Registers, Interpreters, Process Control, Other Familiar Architectures, Heterogeneous Architectures.

Shared Information Systems: Database Integration, Interpretation in Software Development Environments, Architectural Structures for Shared Information Systems.

UNIT III

Architectural Design Guidance: Guidance for User Interface Architectures, Case Study in Inter Operability: World Wide Web.

Pattern Types: Architectural Patterns, Structural Patterns, Patterns for Distribution, Patterns for Interactive Systems.

UNIT IV

Formal Models and Specifications: Finalizing the Architectural of a Specific System, Architectural Style. Architectural Design Space, Case Study of an Industry Standard Computing. Infrastructure: CORBA

Architectural Description Languages: ADL's today, capturing Architectural Information in an ADL, Application of ADL's in system Development, Choosing an ADL, Example of ADL.

UNIT V

Reusing Architectural Assets within an Organization: Creating Products and Evaluating a Product Line, Organizational Implications of a Product Line, Component Based Systems. Software Architectures in Figure: Legacy Systems. Achieving an Architecture, from Architecture to System.

TEXT BOOKS:

1. S/W Arch. Perspective: on an Emerging Discipline, Mary Show, David Garlan, 1996, PHI.
2. Software Architecture in Practice, Len Bass, Paul Elements, Rick Kazman, 1998, PEA.

REFERENCE BOOKS:

1. Measuring the Software Process: A Practical Guide to Functional Measure, Garmus, Herros, 1996, PHI.
2. Meas. Software Process: Stat. Proce. Cont. for Software process Improvemnts, Florac, Carleton, 1999, PEA.
3. Introduction to Team Software Process, W.Humphery, 2002, PEA.
4. Software Design: Methods and Techniques, Peters, 1981, Yourdon.
5. Pattern Oriented Software Architecture, Buschmann, 1996, Wiley.
6. Design Patterns, Gamma et al, 1995, PEA.
7. An Introduction to Software Architecture, Gamma, Shaw, 1995, World Scientific.
8. Software Architecture, Shaw, gamma, 1996, PHI.

IV BTech. I Sem

**(14054108) STORAGE AREA NETWORKS
(ELECTIVE-III)**

**L T C
4 0 3**

Course Objectives:

- Understand Storage Area Networks characteristics and components.
- Become familiar with the SAN vendors and their products
- Learn Fiber Channel Protocols and how SAN components use them to communicate with each other
- Become familiar with Cisco MDS 9000 Multilayer Directors and Fabric Switches thoroughly learn Cisco SAN-OS features.
- Understand the use of all SAN-OS commands. Practice variations of SANOS features.

UNIT - I

What Storage Networking Is and What It Can Mean to You: What is SAN, Why Connect Storage to a Network, The Secret to SANs' Success: Software, The Best Is Yet to Come: Radical Changes in Information, Storage and Processing, Back to Earth, A Couple of Closing Clarifications. **What to Expect from SANs:** The SAN Paradigm Shift, A Model for Enterprise Information Processing, Ten Ways the SAN Paradigm Shift Changes Information Processing for the Better.

UNIT – II

Leading Up to SANs: One View of Data Center Evolution;

Killer Apps for SANs: Backup—The Application Everyone Loves to Hate, Highly Available Data, Disaster Recoverability, Clusters—Continuous Computing, Data Replication, The Bottom Line: Continuous Global Access to Timely Information.

UNIT – III

Storage Networking Architecture: The Path from Data to Application, Network Storage Systems. **The Storage in Storage Networking:** Challenges for Network Storage, The Cost of Online Storage, Making SAN Storage Perform, Keeping SAN Storage Up and Working, Choosing among Storage Options.

UNIT – IV

Basic Software for Storage Networking: Software for SANs, Shared Access Data Managers, Computer System I/O Performance, Volumes: Resilience, Performance, and Flexibility, File

Systems and Application Performance. **Advanced Software for Storage Networking:** Data Replication, Types of Data Replication, Different Types of Data Replication, Synchronous and Asynchronous Replication, Using Data Replication.

UNIT –V

Clusters: The Processing in Data Processing, Cluster Data Models, Disaster Recovery and Global Clusters, Clusters and Storage Area Networks. **Enterprise Backup Software for Storage Area Networks:** Backup Management for SANs, Enterprise Data Protection, Enterprise Backup Architecture, Enterprise Backup Policies, Minimizing the Impact of Backup

TEXT BOOKS:

1. Storage Area Network Essentials - A Complete Guide to Understanding and Implementing SANs by Richard Barker and Paul Massiglia, Wiley, 2002

REFERENCE BOOKS:

1. Introduction to Storage Area Networks and System Networking by Jon Tate et.al., IBM Red Books.
2. SAN - The Network for Storage, a paper by AshishChaturvedi, Tata Consultancy Services.
3. Using SANs and NAS ByW.Curtis Preston, Mike Loukides.

**(14054108) SERVICE ORIENTED ARCHITECTURE
(ELECTIVE-IV)**

L T C
4 0 3

Course Objectives:

- Understand SOA and evolution of SOA.
- Understand web services and primitive, contemporary SOA.
- Understand various service layers.
- Understand service-oriented analysis and design based on guidelines

UNIT I

Fundamental SOA, Common Characteristics of contemporary SOA, Benefits of SOA, A SOA timeline(from XML to Web Services to SOA), The continuing evolution of SOA (Standards organizations and Contributing vendors),The roots of SOA (comparing SOA to Past architectures).

UNIT II

The Web services framework, Services (as Web Services), Service descriptions (with WSDL), Messaging (with SOAP), coordination, Transactions, Business Activities, Security, Notification and Eventing.

UNIT III

Services-orientation and the enterprise, Anatomy of a service-oriented architecture, Common Principles of Service-orientation, Service orientation and Object orientation, Service layer abstraction, application service layer, Business service layer, Orchestration service layer.

UNIT IV

SOA delivery strategies: SOA delivery lifecycle phases, the top-down strategy, the bottom-up strategy ,the agile strategy.

Service-Oriented Design: Introduction to service oriented design, WSDL-related XML Schema language basics, WSDL-language basics.

UNIT V

Business Process Design: WS-BPEL language basics, WS-Coordination overview, Service oriented business process design.

SOA Platforms : SOA platform basics, SOA support in J2EE, SOA support in .NET, integration considerations.

TEXT BOOKS:

1. Service-Oriented Architecture Concepts and Technology and Design, Thomas Erl, Pearson Education, 2005.

REFERENCE BOOKS:

1. IT Architecture and Middleware, Strategies for Building Large Integrated Systems, Chris Britton, ISBN 0-201-70907-4.
2. Understanding SOA with Web Services, Eric Newcomer, Greg Lomow, Pearson Education, 2005.
3. Developing Enterprise Web Services: An Architect's Guide, Sandeep Chatterjee, James Webber, Pearson Education, ISBN 81- 297-0491-9.

IV BTech. I Sem

**(14054110) NETWORK MANAGEMENT SYSTEMS
(ELECTIVE-III)**

**L T C
4 0 3**

Course Objectives:

- Appreciate the need for interoperable network management.
- Understand general concepts and architecture behind standards based network management.
- Understand concepts and terminology associated with SNMP and TMN.
- Appreciate network management as a typical distributed application.
- Get a feeling of current trends in network management technologies.
- Understand Advanced Information Processing Techniques such as Distributed Object Technologies, Software Agents and Internet Technologies used for network management.

UNIT I

Data Communications and Network Management Overview: Analogy of Telephone Network Management, Communications Protocols and Standards.

Basic Foundations: Standards, Models, and Language, Network Management Standards, Network Management Models, Organization Model, Information Model, Communication Model, Functional Model, Network Management Applications.

UNIT II

SNMPv1 Network Management: History of SNMP Management, Internet Organizations and Standards, SNMP Model, organization and information models, communication and functional models.

UNIT III

SNMP Management: SNMPv2, Major Changes in SNMPv2, SNMPv2 System Architecture, SNMPv2 Structure of Management Information. SNMPv2 Management Information Base, SNMPv2 Protocol.

UNIT IV

SNMP Management: SNMPv3, SNMPv3 Key Features, SNMPv3 Documentation Architecture, SNMPv3 Applications, SNMPv3 Management Information Base, SNMPv3 User-based Security Model, Access Control.

SNMP Management: RMON, Remote Monitoring, RMON SMI and MIB, RMON1, RMON2.

UNIT V

Some Current Network Management Topics: Web-Based Management, XML-Based Network Management.

Additional topics in Networks Management, Distributed Network Management, Reliable and Fault Tolerant Network Management.

TEXT BOOKS:

1. Network Management – Principles and Practice, Mani Subramanian, Addison- Wesley Pub Co, First Edition, 2000.
2. SNMP, SNMPv2, SNMPv3, AND RMON 1 and 2, William Stallings, Addison- Wesley, Third Edition, 1999.

REFERENCE BOOKS:

1. Practical Guide to SNMPv3 and Network Management, David Zeltserman, PHI.
2. Network Security and Management, Second Edition, Brijendra Singh, PHI.
3. Network management, Morris, Pearson Education.
4. Principles of Network System Administration, Mark Burges, Wiley Dreamtech.
5. Distributed Network Management, Paul, John Wiley.

(14054111) SOFTWARE TESTING and CASE TOOLS LAB

L P C
0 3 2

Course Objectives:

This course helps the students to

- Demonstrate the UML diagrams with ATM system descriptions
- Demonstrate the working of software testing tools with c language
- Study of testing tools-win runner, selenium etc.
- Writing test cases for various applications

Software Testing

1. Write programs in C language to demonstrate the working of the following constructs:
i) do...while ii) while...do iii) if...else iv) switch v) for
2. “A program written in C language for Matrix Multiplication fails” introspect the causes for its failure and write down the possible reasons for its failure.
3. Take any system (e.g.ATM system) and study its system specifications and report the various bugs.
4. Write the test cases for any known application (e.g. Banking application)
5. Create a test plan document for any application (e.g. Library Management System).
6. Study of any testing tool (e.g.Win runner)
7. Study of any web testing tool (e.g.Selenium)
8. Study of any bug tracking tool (e.g.Bugzilla, bugbit)
9. Study of any test management tool (e.g. Test Director)
10. Study of any open source-testing tool (e.g.Test Link)
11. Take a mini project (e.g. University admission, Placement Portal) and execute it. During the Life cycle of the mini project create the various testing documents* and final test report document.

*Note: To create the various testing related documents refer to the text “Effective Software Testing Methodologies by William E.Perry”.

Case Tools

Students are divided into batches of 5 each and each batch has to draw the following diagrams using UML for an ATM system whose description is given below.

UML diagrams to be developed are:

1. Use Case Diagram
2. Class Diagram

3. Sequence Diagram
4. Collaboration Diagram
5. State Diagram
6. Activity Diagram
7. Component Diagram
8. Development Diagram
9. \Test Design.

Description for an ATM System

The software to be designed will control a simulated automated teller machine (ATM) having a magnetic stripe reader for reading an ATM card, a customer console (keyboard and display) for interaction with the customer, a slot for depositing envelopes, a dispenser for cash (in multiples of Rs.100, Rs.500 and Rs.1000), a printer for printing customer receipts, and a key-operated switch to allow an operator to start or stop the machine. The ATM will communicate with the bank's computer over an appropriate communication link. (the software on the latter is not part of the requirements for this program).

The ATM will service one customer at a time. A customer will be required to insert an ATM Card and enter a personal identification number (PIN) – both of which will be sent to the bank for validation as part of each transaction. The customer will then be able to perform one or more transactions. The card will be retained in the machine until the customer indicates that he/she desires no further transactions, at which point it will be returned – except as noted below.

The ATM must be able to provide the following services to the customer:

1. A customer must be able to make a cash withdrawal from any suitable account linked to the card, in multiples of Rs.100 or Rs.500 or Rs.1000. Approval must be obtained from the bank before cash is dispensed.
2. A customer must be able to make a deposit to any account linked to the card, consisting of cash and/or checks in an envelope. The customer will enter the amount of the deposit into the ATM, subject to manual verification when the envelope is removed from the machine by an operator. Approval must be obtained from the bank before physically accepting the envelope.
3. A customer must be able to make a transfer of money between any two accounts linked to the card.
4. A customer must be able to make a balance inquiry off any account linked to the card.
5. A customer must be able to abort a transaction in progress by pressing the cancel key instead of responding to a request from the machine.

The ATM will communicate each transaction to the bank and obtain verification that it was allowed by the bank. Ordinarily, a transaction will be considered complete by the bank once it has been approved. In the case of a deposit, a second message will be sent to the bank

indicating that the customer has deposited the envelope. (if the customer fails to deposit the envelope within the timeout period, or presses cancel instead, no second message will be sent to the bank and the deposit will not be credited to the customer).

If the bank determines that the customer's PIN is invalid, the customer will be required to re-enter the PIN before a transaction can proceed. If the customer is unable to successfully enter the PIN after three tries, the card will be permanently retained by the machine, and the customer will have to contact the bank to get it back.

If a transaction fails for any reason other than an invalid PIN, the ATM will display an explanation of the problem, and will then ask the customer whether he/she wants to do another transaction.

The ATM will provide the customer with a printed receipt for each successful transaction.

The ATM will have a key-operated switch that will allow an operator to start and stop the servicing of customers. After turning the switch to the 'on' position, the operator will be required to verify and enter the total cash on hand. The machine can only be turned off when it is not servicing customer. When the switch is moved to the 'off' position, the machine will shutdown, so that the operator may remove deposit envelopes and reload the machine with cash, blank receipts etc.

(14054112) DATA WAREHOUSING AND DATA MINING LAB

L P C
0 3 2

Course Objective:

- This course helps the students to understand the overall architecture of a data warehouse and techniques and methods for data gathering and data pre-processing using **OLAP tools**. The different **data mining models** and techniques will be discussed in this course. Data mining and data warehousing applications in bioinformatics will also be explored.

Credit Risk Assessment

Description: The business of banks is making loans. Assessing the credit worthiness of an applicant is of crucial importance. You have to develop a system to help a loan officer decide whether the credit of a customer is good, or bad. A bank's business rules regarding loans must consider two opposing factors. On the one hand, a bank wants to make as many loans as possible. Interest on these loans is the banks profit source. On the other hand, a bank cannot afford to make too many bad loans. Too many bad loans could lead to the collapse of the bank. The bank's loan policy must involve a compromise: not too strict, and not too lenient.

To do the assignment, you first and foremost need some knowledge about the world of credit. You can acquire such knowledge in a number of ways.

1. Knowledge Engineering. Find a loan officer who is willing to talk. Interview her and try to represent her knowledge in the form of production rules.
2. Books. Find some training manuals for loan officers or perhaps a suitable text book on finance. Translate this knowledge from text form to production rule form.
3. Common sense. Imagine yourself as a loan officer and make up reasonable rules which can be used to judge the credit worthiness of a loan applicant.
4. Case histories. Find records of actual cases where competent loan officers correctly judged when, and when not to, approve a loan application.

The German Credit Data:

Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such dataset, consisting of 1000 actual cases collected in Germany. credit dataset (original) Excel spreadsheet version of the German credit data (Down load from web).

In spite of the fact that the data is German, you should probably make use of it for

this assignment. (Unless you really can consult a real loan officer !)

A few notes on the German dataset

- DM stands for Deutsche Mark, the cents Canadian (but looks and acts like a quarter).
- Owns telephone. German phone rat so fewer people own telephones.
- foreignhere_areworkermillionsofthese. Tin Germany (many from Turrkey). It is very hard to get German citizenship if you were not born of German parents.
- There are 20 attributes used in the classify the applicant into one of two categories, good or bad.

Subtasks : (Turn in your answers to the following tasks)

1. List all the categorical (or nominal) attributes and the real-valued attributes seperately.
2. What attributes do you think might be crucial in making the credit assesement ? Come up with some simple rules in plain English using your selected attributes.
3. One type of model that you can create is a Decision Tree - train a Decision Tree using the complete dataset as the training data. Report the model obtained after training.
4. Suppose you use your above model trained on the complete dataset, and classify credit good/bad for each of the examples in the dataset. What % of examples can you classify correctly ? (This is also called testing on the training set) Why do you think you cannot get 100 % training accuracy ?
5. Is testing on the training set as you did above a good idea ? Why or Why not ?
6. One approach for solving the problem encountered in the previous question is using cross validation ? Describe what is cross-validation briefly. Train a Decision Tree again using cross-validation and report your results. Does your accuracy increase/decrease ? Why ? (10 marks)
7. Check to see if the data shows a bias against "foreign workers" (attribute 20),or "personal-status" (attribute 9). One way to do this (perhaps rather simple minded) is to remove these attributes from the dataset and see if the decision tree created in those cases is significantly different from the full dataset case which you have already done. To remove an attribute you can use the preprocess tab in Weka's GUI Explorer. Did removing these attributes have any significant effect? Discuss.

8. Another question might be, do you really need to input so many attributes to get good results? Maybe only a few would do. For example, you could try just having attributes 2, 3, 5, 7, 10, 17 (and 21, the class attribute (naturally)). Try out some combinations. (You had removed two attributes in problem 7. Remember to reload the arff data file to get all the attributes initially before you start selecting the ones you want.)
9. Sometimes, the cost of rejecting an applicant who actually has a good credit (case 1) might be higher than accepting an applicant who has bad credit (case 2). Instead of counting the misclassifications equally in both cases, give a higher cost to the first case (say cost 5) and lower cost to the second case. You can do this by using a cost matrix in Weka. Train your Decision Tree again and report the Decision Tree and cross-validation results. Are they significantly different from results obtained in problem 6 (using equal cost)?
10. Do you think it is a good idea to prefer simple decision trees instead of having long complex decision trees ? How does the complexity of a Decision Tree relate to the bias of the model ?
11. You can make your Decision Trees simpler by pruning the nodes. One approach is to use Reduced Error Pruning - Explain this idea briefly. Try reduced error pruning for training your Decision Trees using cross-validation (you can do this in Weka) and report the Decision Tree you obtain ? Also, report your accuracy using the pruned model. Does your accuracy increase ?
12. (Extra Credit): How can you convert a Decision Trees into "if-then-else rules". Make up your own small Decision Tree consisting of 2-3 levels and convert it into a set of rules. There also exist different classifiers that output the model in the form of rules - one such classifier in Weka is rules.PART, train this model and report the set of rules obtained. Sometimes just one attribute can be good enough in making the decision, yes, just one ! Can you predict what attribute that might be in this dataset ? OneR classifier uses a single attribute to make decisions (it chooses the attribute based on minimum error). Report the rule obtained by training a one R classifier. Rank the performance of j48, PART and oneR.

Task Resources:

Andrew Moore's Data Mining Tutorials (See tutorials on Decision Trees and Cross Validation)

Decision Trees (Source: Tan, MSU), Tom Mitchell's book slides (See slides on Concept Learning and Decision Trees)

Weka Resources:

Introduction to Weka (html version) (download ppt version)

Download Weka, Weka Tutorial , ARFF format using Weka from command line

IV B.Tech. II Sem

(14254201) MANAGEMENT SCIENCE

L T C
4 0 3

Course Objective:

- The objective of this course is to equip the student the fundamental knowledge of Management Science and its application to effective management of human resources, materials and operations of an organization. It also aims to expose the students about the latest and contemporary developments in the field of management.

UNIT I

INTRODUCTION TO MANGEMENT:

Concept of Management-Administration, Organization-Function of Management, Evolution of Management Thought-Organization: Principles of Organisation-Types-Organisation charts-managerial objectives and Social responsibilities of Management.

UNIT II

STRATEGIC AMNAGEMENT:

Corporate Planning-mission, objectives and programmes-SWOT Analysis-Strategy Formulation and Implementation.-Plant location and Plant Layout concepts-Production control.

UNIT III

HRM AND INVENTORY MANAGEMENT:

Human Resource Management –Manpower Planning-Personnel Management-Basic functions of Personnel Management, Job Evaluation and Merit Rating-Incentive plans.

Inventory Management: Need for Inventory Control; EOQ,ABC Analysis, Purchase Procedure, Maintaining Store Records.

UNIT IV

OPERARIONS MANAGEMENT:

Productivity- Job, Batch and Mass Production-Work Study-Basic procedure involved in Method Study and Work Measurement. Statistical Quality Control-c chart, p chart, R chart, Acceptance sampling Deming's contribution to Quality.

UNITV

PROJECT MANAGEMENT:

Network Analysis to project management- PERT/CPM- Application of network techniques to engineering problems-Cost Analysis-Project Crashing.

TEXT BOOK:

1.Aryasri: Management Science, TMH, 2008.

REFERENCE BOOKS:

1.Koontz& Weihrich:Essentials of Management,6/e, TMH, 2005

2.Kanishka Bedi:Production and Oerations Management,Oxford University Press, 2004

3.Parnell:Strategic Management,Biztantra, 2003.

4.LS Srinath: PERT/CPM,Affiliated East-West Press, 2005

IV B.Tech. II Sem

(14054202) CRYPTOGRAPHY & NETWORK SECURITY

L T C
4 0 3

Course Objectives:

- Extensive, thorough and significant understanding of the concepts, issues, principles and theories of computer network security
- Identifying the suitable points for applying security features for network traffic
- Understanding the various cryptographic algorithms and implementation of the same.
- Understanding the various attacks, security mechanisms and services.

UNIT I

Security Goals, Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs.

UNIT II

Mathematical Tools for Cryptography: Prime and Relative numbers, Modular Arithmetic, Fermat's and Euler's theorems, Testing for primality, Chinese remainder theorem, Discrete logarithms, Conventional Encryption Principles & Algorithms(DES, AES, RC4), Block Cipher Modes of Operation, Location of Encryption Devices, Key Distribution.

UNIT III

Public key cryptography principles, public key cryptography algorithms (RSA, RABIN, ELGAMAL, Diffie-Hellman, ECC), Key Distribution, Approaches of Message Authentication, Secure Hash Functions(SHA-512, WHIRLPOOL) and HMAC.

UNIT IV

Digital Signatures: Comparison, Process- Need for Keys, Signing the Digest, Services, Attacks on Digital Signatures, Kerberos, X.509 Directory Authentication Service, Network Management, Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3, OS Security, OS Security Functions, Separation, Memory Protection, Access Control.

UNIT V

Viruses and related threats, Anatomy of Virus, Virus Counter Measures, Software Flaws: Buffer Overflow, Incomplete Mediation, Race Conditions, Malware: Brain, Morris Worm, Code Red, Malware Detection, Firewalls, Design principles, Types of Firewalls, Trusted Systems.

TEXT BOOKS:

1. Cryptography and network Security by Fourth edition, Stallings, PHI/Pearson
2. Cryptography & Network Security by Behrouz A. Forouzan, TMH.

REFERENCE BOOKS:

1. Network Security: The complete reference by Robert Bragg, Mark Rhodes, TMH
2. Computer Security Basics by Rick Lehtinen, Deborah Russell & G.T.Gangemi Sr., SPD O'REILLY.

(14054203) DESIGN PATTERNS

L T C
4 0 3

Course Objectives:

- To understand design patterns and their underlying object oriented concepts.
- To understand implementation of design patterns and providing solutions to real world software design problems.
- To understand patterns with each other and understanding the consequences of combining patterns on the overall quality of a system.

UNIT I

Introduction: What Is a Design Pattern?, Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems?, How to Select a Design Pattern?, How to Use a Design Pattern?.

UNIT II

Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.

Structural Patterns-I: Adapter, Bridge, Composite.

UNIT III

Structural Patterns-II: Decorator, Facade, Flyweight and Proxy, Discussion of Structural Patterns.

Behavioral Patterns-I: Chain of Responsibility, Command, Interpreter, Iterator.

UNIT IV

Behavioral Patterns-II: Mediator, Memento, Observer, State, Strategy, Template Method and Visitor, Discussion of Behavioral Patterns.

What to Expect from Design Patterns, A Brief History, The Pattern Community
An Invitation, A Parting Thought.

UNIT V

A Case Study: Designing a Document Editor: Design Problems, Document Structure, Formatting, Embellishing the User Interface, Supporting Multiple Look-and-Feel Standards, Supporting Multiple Window Systems, User Operations Spelling Checking and Hyphenation, Summary.

TEXT BOOK:

1. Design Patterns By Erich Gamma, Pearson Education

REFERENCE BOOKS:

1. Head First Design Patterns By Eric Freeman-Oreilly-spd
2. Pattern's in JAVA Vol-I By Mark Grand ,Wiley DreamTech.
3. Pattern's in JAVA Vol-II By Mark Grand ,Wiley DreamTech.
4. JAVA Enterprise Design Patterns Vol-III By Mark Grand ,Wiley DreamTech.
5. Design Patterns Explained By Alan Shalloway,Pearson Education.

**(14054204) PRINCIPLES OF TCP/IP
(ELECTIVE-IV)**

L T C
4 0 3

Course Objectives:

- To understand the internals of the TCP/IP Protocols.
- To understand how TCP/IP is actually implemented.
- To understand the interaction among the protocols in the protocol stack.
- To understand about routing protocols .
- To understand about subnets and super nets.

UNIT I

The OSI Model and the TCP/IP Protocol suite: TCP/IP Protocol Suite, Addressing. Internet Protocol Version 4 (IPv4): Datagrams, Fragmentation, Options, Checksum.

UNIT II

IPv4 Addresses: Introduction, Classful Addressing, Classless Addressing, Special Addresses, NAT. Address Resolution Protocol (ARP): Address Mapping, The ARP Protocol, ATMARF, ARP PACKAGE.

UNIT III

Internet Control Message Protocol Version 4: Introduction, Messages, Debugging Tools, ICMP Package. Unicast Routing Protocols (RIP, OSPE, and BGP): Introduction, Intraand Inter-Domain Routing, Distance Vector Routing, RIP, Link State Routing, OSPF, Path Vector Routing, BGP.

UNIT IV

User Datagram Protocol (UDP): Introduction, User Datagram, UDP Services, UDP Applications, UDP Package. Transmission Control Protocol (TCP): TCP Services, TCP Features, Segment, A TCP Connection.

UNIT V

IPv6 Protocol: Introduction, Packet format, transition from IPv4 to IPv6

IPv6 addressing: Introduction, Address space allocation, Global unicast addresses, auto configuration renumbering.

TEXT BOOK:

1. TCP/IP Protocol Suite, Behrouz A.Forouzan- Fourth Edition- TATA McGraw-Hill.

REFERENCE BOOKS:

1. Internetworking with TCP/IP, Second Edition, Douglas E. Comer, Stevens, PHI.
2. CP/IP Network Administration, Third Edition, Craig Hunt, O'Reilly.
3. Introduction to Data Comm

IV B.Tech. II Sem

**(14054205) SOFT COMPUTING
(ELECTIVE-IV)**

**L T C
4 0 3**

Course Objectives:

- To familiarize with soft computing concepts.
- To introduce the ideas of Neural networks, fuzzy logic and use of heuristics based on human experience.
- To introduce the concepts of Genetic algorithm and its applications to soft computing using some applications.

UNIT I

Introduction to Artificial Intelligent Systems, Fundamentals of Neural Networks, Back-Propagation Networks.

UNIT II

Associative Memory, Adaptive Resonance Theory, Fuzzy logic

UNIT III

Fuzzy Systems, Fundamentals of Genetic Algorithms, Genetic Modeling

UNIT IV

Integration of Neural Networks, Fuzzy Logic and Genetic Algorithms, Genetic Algorithm based Back-Propagation Networks, Fuzzy back propagation Networks.

UNIT V

Simplified Fuzzy ARTMAP, Fuzzy Associative Memories, Fuzzy Logic Controlled Algorithms.

TEXT BOOKS:

1. Rajasekaran S, and Vijayalakshmi Pal G A, *Neural Networks, Fuzzy Logic and Genetic Algorithms – Synthesis and Application*, Prentice-Hall of India Pvt Ltd, 2003.

REFERENCE BOOKS:

1. Walker E A, *A First Course in Fuzzy Logic*, 2nd Edition, CRC Press, 1999.
2. Lu, *Fuzzy Logic with Engineering Application*, John Wiley, 2004.
3. Haupt, *Genetic Algorithms*, John Wiley, 1999.
4. Yegnanarayana B, *Artificial Neural Networks*, Prentice-Hall of India Pvt Ltd, 1999.
5. Satish Kumar, *Neural Networks - A Classroom Approach*, Tata McGraw-Hill, 2004.

(14054206) GRID COMPUTING
(ELECTIVE-1)

L T C
4 0 3

Course Objectives:

- To understand and explain the key concepts of Grid Computing
- To identify the resource selection for Grid environment
- To understand about Grid computing history, evolution of Grid and its Security issues
- To understand Data management and transfer in Grid environments
- To know about Resource management technologies for Grid
- To understand the recent versions of Globus toolkit.

UNIT - I

An Introduction to the Grid: Introduction, Characterization of the Grid, Grid-Related Standards Bodies , The Architecture of the Grid , OGSA and WSRF.

UNIT – II

Grid Monitoring: Grid Monitoring Architecture (GMA), An Overview of Grid Monitoring Systems- Grid ICE – JAMM –MDS, Network Weather Service, R-GMA, Other Monitoring Systems- Ganglia and GridMon.

UNIT – III

Grid Security And Resource Management: Grid Security-A Brief Security Primer, Grid Scheduling and Resource Management-Scheduling Paradigms- How Scheduling works -A Review of Condor, SGE, PBS and LSF-Grid Scheduling with QoS.

UNIT – IV

Data Management And Grid Portals: Data Management-Categories and Origins of Structured Data-Data Management Challenges-Architectural Approaches-Collective Data Management Services-Federation Services-Grid Portals-First-Generation, Second-Generation Grid Portals.

UNIT - V

Grid Middleware: List of globally available Middle wares - Case Studies-Recent version of Globus Toolkit and gLite - Architecture, Components and Features.

TEXT BOOKS:

1. Maozhen Li, Mark Baker, The Grid Core Technologies, John Wiley & Sons, 2005.

REFERENCE BOOKS:

1. Ian Foster & Carl Kesselman, The Grid 2 – Blueprint for a New Computing Infrascture, Morgan Kaufman – 2004.
2. Joshy Joseph & Craig Fellenstein, Grid Computing, Pearson Education 2004.
3. Fran Berman,Geoffrey Fox, Anthony J.G.Hey, Grid Computing: Making the Global Infrastructure a reality, John Wiley and sons, 2003.