ANNA UNIVERSITY, CHENNAI

AFFILIATED INSTITUTIONS

CURRICULAM AND SYLLABI - REGULATIONS – 2010

B.Sc – (COMPUTER TECHNOLOGY) – 3 YEARS

SEMESTER I

COURSE CODE	COURSE TITLE	L	T	P	C
Theory					
YEN001	Technical English - I	4	0	0	4
YMA001	Applied Mathematics - I	3	1	0	4
YCS911	Digital Principles	3	0	0	3
YCS912	Computer Concepts & Problem Solving	3	0	0	3
YCS913	Programming in C	3	0	0	3
Practicals					
YCS915	Computer Concepts and Problem Solving Laboratory	0	0	3	2
YCS916	C Programming Laboratory	0	0	3	2
YCS917	Digital laboratory	0	0	3	2
	TOTAL CREDITS				**23**

SEMESTER II

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YEN002	Technical English - II	4	0	0	4
YMA002	Applied Mathematics - II	3	1	0	4
YCT921	Microprocessors	3	0	0	3
YCS922	Basics of Electrical Engineering	3	0	0	3
YCS923	Data Structures	3	0	0	3
PRACTICALS					
YCT922	Microprocessors Lab	0	0	3	2
YCT923	Electrical Engineering Lab	0	0	3	2
YCS927	Data Structures Laboratory	0	0	3	2
	TOTAL CREDITS				**22**

SEMESTER III

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YMA003	Mathematical Structures	3	1	0	4
YIT932	Object Oriented Programming	3	0	0	3
YCS924	Computer Architecture	3	0	0	3
YCS933	Database Management Systems	3	0	0	3
YCS935	Algorithm Design Techniques	3	1	0	4
PRACTICALS					
YCS926	Object Oriented Programming Laboratory	0	0	3	2
YCS937	Database Management Systems Lab	0	0	3	2
YCT931	Algorithm Design Laboratory	0	0	3	2
	TOTAL CREDITS				**23**

SEMESTER IV

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YMA004	Probability and Statistics	3	1	0	4
YCS942	Operating Systems	3	0	0	3
YCS943	Internet Programming	3	0	0	3
YCS934	Software Engineering	3	0	0	3
E1	Elective – I	3	0	0	3
PRACTICALS					
YCT941	Operating Systems Lab	0	0	3	2
YCS947	Internet Programming Laboratory	0	0	3	2
YCT942	Software Engineering Laboratory	0	0	3	2
	TOTAL CREDITS				**22**

SEMESTER V

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YCS951	Computer Networks	3	0	0	3
YCS953	Computer Graphics	3	0	0	3
YCT951	Client Server Technology	3	0	0	3
E2	Elective – II	3	0	0	3
E3	Elective – III	3	0	0	3
PRACTICALS					
YCS957	Computer Networks Lab	0	0	3	2
YCT952	Computer Graphics Lab	0	0	3	2
YCT953	Client Server Technology Lab	0	0	3	2
	TOTAL CREDITS				**21**

SEMESTER VI

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YCS961	Principles of Management	3	0	0	3
YCT961	Network Security	3	0	0	3
	Elective – IV	3	0	0	3
	Elective – V	3	0	0	3
	Elective – VI	3	0	0	3
PRACTICALS					
YCT962	Project Work	0	0	12	6
	TOTAL CREDITS				**21**

TOTAL CREDITS TO BE EARNED FOR THE AWARD OF THE DEGREE   = 132

LIST OF ELECTIVES

SEMESTER IV

COURSE CODE	COURSE TITLE	L	T	P	C
YCT001	Multimedia Systems	3	0	0	3
YCT002	Compiler Design	3	0	0	3
YCT003	Professional Ethics	3	0	0	3
YCS932	Principles of Data Communication	3	0	0	3

SEMESTER V

COURSE CODE	COURSE TITLE	L	T	P	C
YCS008	Image Processing	3	0	0	3
YCT005	Information Security	3	0	0	3
YCS002	Management Information Systems	3	0	0	3
YCT006	Artificial Intelligence	3	0	0	3
YCS001	Business Data Processing	3	0	0	3
YCS016	Distributed Operating System	3	0	0	3

SEMESTER VI

COURSE CODE	COURSE TITLE	L	T	P	C
YCS004	PC Testing and Trouble Shooting	3	0	0	3
YCS012	Mobile Computing	3	0	0	3
YCS015	Software Project Management	3	0	0	3
YCS014	Advanced DBMS	3	0	0	3
YCT954	Web Technology	3	0	0	3
YCT007	Neural Networks	3	0	0	3
YCS017	Fuzzy Logic	3	0	0	3
YCS011	Decision Support Systems	3	0	0	3
YCT008	Advanced Software Engineering	3	0	0	3

	L	**T**	**P**	**C**

YEN001   **TECHNICAL ENGLISH - I**   **L T P C**
                                                            4 0 0 4

UNIT – I   ENGLISH TODAY   (12)

Modern English: varieties of discourse—regional variations—accent and dialects—social variations—occupational varieties and scientific English—medium and attitude; speaking and writing; formal and informal style—language change—new ways of studying English.

UNIT –II   EXTENDING VOCABULARY: STRUCTURAL AND CONTENT   (12)
               WORDS

Principles of word formation; abbreviations and acronyms; foreign words and phrases; idioms and phrases—everyday computer—related words; scientific and technical terms.

UNIT – III   GRAMMAR   (12)

Referring to people and things with the help of noun phrases- describing people and things with the help of determiners- adjectives and modifiers- making a message- varying the message: negation question exclamation inversion – expressing words referring to time, place and manner- reporting what people say or think – combining messages: coordination and subordination- making text- the structure of information.

UNIT – IV   RECEPTIVE SKILL 1—LISTENING   (12)

Developing guided note taking from a lecture, recognizing and using descriptive words and phrases, completing information in a table, practicing dictation and checking spelling, developing accuracy in listening, imitating standard spoken English through native speakers' talk and presentation, listening for general and specific information, listening to news in the media and relating information to issues and locales around the world.

UNIT – V   RECEPTIVE SKILL 2—READING   (12)

Predicting the content – skimming the text for gist- identifying the topic sentences – guessing the meaning of words from contexts – scanning for specific information – transfer of information – cloze reading.

                                                   TOTAL :   60

REFERENCE BOOKS :

1   Adrian Doff & Christopher Jones, "Language in use – intermediate", Cambridge University Press, 2003.

2   Gail Ellis and Barbara Sinclair, "Learning to learn English: A course in learner training", Cambridge University Press, 1989.

	L	**T**	**P**	**C**
YMA001 **APPLIED MATHEMATICS - I**	**3**	**1**	**0**	**4**

UNIT – I   COMPLEX NUMBERS   **(12)**

Expansion of Sin $n\theta$ Cos $n\theta$ in terms of Sin θ and Cos θ - Expansion of $Sin^n\theta$; $Cos^n \theta$ in terms of sines and cosines of multiples of θ, hyperbolic functions. Inverse hyperbolic functions.

UNIT – II   MATRICES   **(12)**

Rank of matrix - consistency and inconsistency of a system of linear equations – Eigen values and Eigen vectors – Properties - Cayley Hamilton theorem – Reduction of Quadratic form to Canonical form by Orthogonal reduction.

UNIT – III   DEFINITE INTEGRALS   **(12)**

Reduction formula for integral of $sin^n x$, $cos^n x$, $tan^n x$ – Definite integrals –Properties – Area of Cartesian Curves -– volumes of Revolution.

UNIT – IV   ORDINARY DIFFERENTIAL EQUATIONS

                                                                                                                          (12)

Solution of second order with constant coefficients and Variable coefficients - complimentary function – particular integrals – simultaneous linear equations with constant coefficients of first order.

UNIT – V   APPLICATION OF DIFFERENTIATION   **(12)**

Curvature of a curve – Radius of a curvature in Cartesian form - Centre of curvature – Circle of curvature – Evolutes and Envelopes.

                              LECTURE: 45   TUTORIALS: 15   TOTAL : 60

REFERENCE BOOKS :

1. Veerarajan.T., "Engineering Mathematics", TMH Pub. Co. Ltd., New Delhi 1999.
2. Kandasamy.P., Thilagavathy.K. and Gunavathy.K. – "Engineering Mathematics, Volume – I", S.Chand & Co., New Delhi, 2001.

	L	**T**	**P**	**C**
YCS911 **DIGITAL PRINCIPLES**	**3**	**0**	**0**	**3**

UNIT – I   9

Binary Systems : Digital Systems, Binary Numbers, Number Base Conversions, Octal and Hexadecimal Numbers, Complements, Signed Binary Numbers, Binary Codes, Binary Storage and Registers, Binary Logic

Boolean Algebra and Logic Gates: Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Digital Logic Gates.

UNIT – II   9

Minimization: K-Map Method – Table Method, POS - SOP, Don't Care Conditions, NAND, NOR Implementation, Introduction to HDL.

Combinational Logic: Combinational Circuits, Analysis and Design Procedure, Binary Adder, Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers.

UNIT – III   9

Synchronous Sequential Logic: Sequential Circutes - Latches, Flip-Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment Design Procedure.

UNIT – IV   9

Registers and Counters: Registers, Shift Registers, Ripple Counters, Synchronous Counters, Ring Counters-Johnson Counter.

UNIT – V   9

Asynchronous Sequential Circuit : Introduction, Analysis Procedure, Circuits with Latches, Design Procedure, Reduction of State and Flow Tables, Race – Free State Assignment Hazards, Design Example.

TOTAL : 45

REFERENCE BOOKS:

1. M.Morris Mano, "Digital Design", 3rd edition, Pearson Education, Delhi, 2007.

2. Donald P Leech, Albert Paul Malvino and Goutam Saha, "Digital Principles and Applications", Tata Mc Graw Hill, 2007.

YCS912   COMPUTER CONCEPTS & PROBLEM SOLVING

L	T	P	C
3	0	0	3

UNIT – I   FUNDAMENTALS OF COMPUTERS   9

Evolution of Computers – Inputs/Outputs – Alternative Methods of Input – Organization of Modern Digital Computers – Operating System – Multitasking OS – Graphical User Interface.

UNIT – II   WORD PROCESSING   9

Word Processing Programs and Their Uses – Word Processor's Interface – Editing Text – Formatting Text –Macro- Special Features of Word – Desktop Publishing Service – Converting doc into www pages

UNIT – III   SPREADSHEET SOFTWARE   9

Spreadsheet Programs – applications – Spreadsheet package features, attributes - structure, label, data, importing data, formula, functions – data handling – Managing workbooks.

UNIT – IV   INTRODUCTION TO COMPUTER PROBLEM SOLVING   9

Introduction – Problem Solving aspects-Top-Down Design-Implementation of Algorithms – Program Verification-Efficiency of Algorithms-Analysis of Algorithm-fundamental algorithm-factorial computation-generation of Fibonacci sequence.

UNIT – V   FACTORING AND ARRAY TECHNIQUES   9

Factoring Methods-finding the square root of a number-generating prime numbers- Array techniques-array order reversal-Finding the maximum number in a set- Removal of duplicates from an ordered Array-finding the kth smallest element.

TOTAL :   45

REFERENCE BOOKS :

1   Peter Norton,"Introduction to Computers",4th Edition, TMH Ltd, New Delhi, 2001.
2   R.G. Dromey,"How to solve it by Computers", Pearson Publishers, New Delhi, 2007.

YCS913   **PROGRAMMING IN C**   L   T   P   C
                                                                   3   0   0   3

UNIT I   INTRODUCTION TO C LANGUGE   9
Overview of 'C'language – Constants, Variables and Data Types – Operators,Expressions and
Assignment statements – Managing Input/Output Operations –Formatted I/O – Decision Making
- Branching – IF, Nested IF – Switch – go to -Looping- While, do, for statements.

UNIT II   ARRAYS AND FUNCTIONS   9
Arrays – dynamic and multi-dimensional arrays - Character arrays and Strings –String handling
Functions - User defined Functions – Categories of Functions –Recursion.

UNIT III   STRUCTURES AND UNIONS   9
Basics of Structures-Declaring a Structure – Array of Structures –Passing Structureselements to
Functions- Passing entire Structure to Function – Structures within
Structures - Union – Union of Structures – Enumerated Data Types – type of Statement.

UNIT IV   POINTERS   9
Pointers – Declaration, Accessing a variable, dynamic memory allocation, Pointers versus
Arrays, Array of pointers, Pointers to functions and structure Pointers.

UNIT V   FILE MANAGEMENT   9
File Management in C – Data hierarchy- Files and Streams – Sequential access file-Random
access file - Preprocessors.

                                                             TOTAL : 45 PERIODS

REFERENCE BOOKS :
1. V.Rajaraman "Computer Programming in C" PHI, New Delhi, 2001
2. Kamthane, A.N., "Programming with ANSI and Turbo C", Pearson Education,Delhi, 2006.
3. Yashavant P. Kanetkar " Pointers In C" , BPB Publications, New Delhi, 2002
4. E.Balagurusamy " Programming in ANSI C " , Tata McGraw Hill, 2004
5. Deitel and Deitel " C How to Program ", Addisson Wesley , 2001

YCS915   **COMPUTER CONCEPTS AND PROBLEM SOLVING**   **L   T   P   C**
                                       LABORATORY
                                                                             0   0   3   2

LIST OF EXERCISES:

1. Word Processing
2. Spreadsheet
3. Power point
4. Factorial
5. Fibonacci
6. Prime Generation
7. Removal of duplicates from an ordered Array
8. Finding the kth smallest element.

TOTAL : 45 PERIODS

YCS916   **C PROGRAMMING LABORATORY**   **L   T   P   C**
                                                                0   0   3   2

LIST OF EXERCISES:
Implementation of

1.   Input / output function

2.   Control Functions

3.   Functions

4.   Arrays

5.   Pointers

6.   Structures and Unions

7.   Files

8.   Using case studies on: Roots of a quadratic equation, Measures of location –

9.   Matrix Operations – Evaluation of trigonometric functions – Pay roll problems.

10. String operations like substring, concatenation, finding a string from a given

11. Paragraph, finding the number of words in a paragraph.

TOTAL : 45 PERIODS

YCS917	**DIGITAL LABORATORY**	L	T	P	C
		0	0	3	2

LIST OF EXERCISES

1   Binary and BCD counter
2   Verification of NAND, NOR, XOR, AND, OR Gate Logic
3   Parity Generator
4   Multiplexer / Demultiplexers
5   Adder / Subtractor
6   Code Converters
7   Up / Down 4 bit Binary Counter
8   Up / Down 4 bit Decimal Counter
9   Shift Register
10   Ring Counter

TOTAL :   45

YEN002	**TECHNICAL ENGLISH - II**	L	T	P	C
		4	0	0	4

UNIT – I   ENGLISH TODAY   12

British and American Words – Communicating across cultures- Dealing with Discrimination – non verbal communication – values, beliefs & practices, Body language, The importance of Listening, Speaking and Interpersonal communication– purpose of Messages in Organization.

UNIT – II   GRAMMAR (FOCUS ON LANGUAGE)   12

Identifying the lexical and contextual meaning of words – expanding nominal compounds – framing of questions ('Wh' pattern, yes/no questions, tag questions) Subject – verb agreement, use of articles, preposition and conditionals – impersonal passive – error detection and punctuation

UNIT – III   RECEPTIVE SKILLS 1 & 2 – LISTENING AND READING   12

Gap filling activity while listening - intensive listening – listening to a discourse and filling up gaps in a worksheet – comprehension tasks based on listening. Reading the gist to identify the topic sentence – its role – sequencing of sentences – transcoding diagrams – understanding discourse coherence and cohesion

UNIT – IV   PRODUCTIVE SKILL 1 – SPEAKING   12

Making Oral presentations – planning, kinds of presentation – adapting your ideas to audience, planning visual and other device to involve the audience – conducting

language games to enrich spoken skills – facing interviews and negotiating benefits.

UNIT – V   PRODUCTIVE SKILL 2 – WRITING   12

One sentence definition of technical terms – descriptions, paragraph writing, process description, check list, job application & resume, business letters (Calling for quotation, placing orders, enquiry etc) – Instruction and recommendation

TOTAL:60 PERIODS

REFERENCE BOOKS:
 1   Kitty O Locker, "Business Communication – Building critical Skills", Mc-Graw
     Hill, Third Edition 2007
 2   Bridha Prabhakar,   G.   Subramanian, "Technical   English   for
     Engineering

     Students", Gems Publications, 2006.
 3   Aysha Viswamohan, "English for Technical Communication", Tata McGraw Hill, 2007

YMA002   **APPLIED MATHEMATICS - II**   **L   T   P   C**
                                                                            3   1   0   4

UNIT – I   MULTIPLE INTEGRALS   (12)
Double integration- Cartesian and polar co-ordinates- Change of order of integration- Area as a double integral, Change of variables between Cartesian and polar co- ordinates- Triple integration- Volume as a triple integral

UNIT – II   FOURIER SERIES   (12)
Dirichlet's condition-General Fourier series-Odd and even functions-Half range Fourier series-Parseval's identity-Harmonic analysis

UNIT – III   COMPLEX DIFFERENTIATION   (12)
Functions of complex variable-analytic function-NecessaryCondition-CauchyRiemann equation–Sufficient conditions (excluding proof) -Properties of analytic functions–Harmonicconjugate-Construction of analytic functions – Conformal Mapping - $w=z+a, w=az, w=1/z. w=z^2$-Bilinear transformation.

UNIT – IV   COMPLEX INTEGRATION   (12)
Statement and applications of Cauchy's Integral theorem and formula-Taylor's and Laurent's expansions- Isolated singularities- Residues-Cauchy's residue theorem-Contour integration over unit circle and semi circular contour (excluding poles on boundaries)

UNIT – V   LAPLACE TRANSFORM
(12) Laplace Transforms-Condition for existence-Transforms of Elementary functions-Basic properties-Derivatives and integrals of transforms- Transforms of derivatives and integrals – Initial and Final value theorem- Transform of unit step functions and impulse

function–Transformof Periodic function-InverseLaplace transform- Convolution theorem-Solution of linear ODE of second order with constant co- efficient, using Laplace transformation

<div align="center">**LECTURE: 45   TUTORIALS: 15 TOTAL: 60**</div>

REFERENCE BOOKS:

1 Kandasamy. P, Thilagavathy K and Gunavathy K, Engineering Mathematics for First year B.E/B.Tech, S.Chand and company Ltd, New Delhi-110055, Seventh Revised edition 2007

2 Veerarajan T , Engineering Mathematics (for First year) Tata Mc Graw Hill Publishing co.New Delhi 110008 (2008)

3 Grewal B.S, Higher Engineering Mathematics 38th edition, Khanna Publishers New Delhi (2004)

YCT921   **MICROPROCESSORS**   **L   T   P   C**

<div align="right">**3   0   0   3**</div>

UNIT – I   8085 Microprocessor   9

:The 8085 MPU– Architecture – Instruction formats – Addressing modes – Instruction set – Programming with 8085 – 8085 based microcomputer system.

UNIT – II   8086 Software   9

:Intel 8086 Microprocessor – Architecture – Assembly Language Programming – Linking and relocation – Stacks – Procedures – Macros - Interrupts and Interrupt Routines – Byte & String Manipulation

UNIT – III   8086 System Design   9

:8086 signals – Basic configurations – System bus timing – system design using 8086 – Multiprocessor configurations – Coprocessor, Closely coupled and loosely coupled configurations.

UNIT – IV   I/O Interfaces   9

: Serial Communication Interface – Parallel communication interface – Programmable Timer – Keyboard and Display controller – DMA controller – Interrupt controller – Maximum Mode and 16-bit bus interface designs.

UNIT – V   Advanced Processors   9

:Intel's 80X86 family of processors – Salient features of 80286, 80386, 80486 and the

Pentium Processors.

<div align="right">**TOTAL: 45 PERIODS**</div>

REFERENCE BOOKS:

1 Ramesh s.gaonkar, "Microprocessor Architecture, Programming and Applications with the 8085", 4th Edition, Penram International Publishing (India) Pvt.

Ltd., 1999.

2 Douglas v. Hall, "Microprocessors and Interfacing", Tata Mcgraw Hill, 1999.
3 Yu-cheng liu and Glenn a.Gibson, "Microcomputer Systems: The 8086/8088 Family Architecture, Programming & Design", 2nd Edition, Prentice Hall of India pvt. Ltd., 2001.
4 Barry b.Brey, "The Intel Microprocessors – 8086/8088, 80186, 286, 386, 486, Pentium and Pentium Pro Processor", Prentice Hall of India Pvt. Ltd., 1998.

YCS922 **BASICS OF ELECTRICAL ENGINEERING** **L T P C**
                                                              3 0 0 3

UNIT – I   FUNDAMENTALS OF DC AND AC CIRCUITS   9
Fundamentals of DC circuits: Ohm's law, Kirchhoff's law, Simple resistive circuits – Effect of series and parallel resistances – Mesh and Nodal analysis – Simple problems. Fundamentals of AC circuits: RMS and Average values of sine wave, Form factor, Peak factor. Single phase AC circuits – Impedance - Power and Power Factor – Series RL,RC, RLC circuits - Simple problems

UNIT – II FUNDAMENTALS OF MAGNETIC CIRCUIT   9
Ohm's law of magnetic circuit, Simple and composite magnetic circuits, Effect of air gap – leakage factor – fringing effect – Simple problems. Faraday's law of electromagnetic induction – Self and Mutually induced EMF – Statically and Dynamically induced EMF – Simple problems.

UNIT – III DC MACHINES AND TRANSFORMER   9
DC Machine: Construction – EMF equation of DC generator – Types of Generators and Motors – Characteristics.
Transformer: Construction – EMF equation – Transformation ratio – Types of Single Phase Transformers.

UNIT – IV INDUCTION MACHINES   9
Three phase Induction Motor: Construction, Types – Principle of Operation – Torque Equation – Slip Vs Torque Characteristics of Cage and wound rotor.
Single Phase Induction Motor: Principle of Operation – Types – Applications.

UNIT – V POWER SUPPLIES   9
Half and Full wave rectifier - Bridge rectifier - rectification efficiency – transformer utility factor -voltage regulator- introduction to SMPS and UPS.

TOTAL :45 PERIODS

REFERENCE BOOKS :

1 B.L.Theraja, "Electrical Technology" - Vol I&II – Nirja construction and development company, New Delhi.

2 V.N.Mittle, "Basic Electrical Engineering", Tata Mc.Graw Hill, New Delhi, 2006.

3 V. Del Toro, "Electrical Engineering Fundamentals", PHI, NewDelhi, 1993.

YCS923   **DATA STRUCTURES**   **L   T   P   C**
                                                              3   0   0   3

UNIT – I   PROBLEM SOLVING   **9**
Problem solving – Top-down Design– Implementation– Verification– Efficiency–Analysis – Sample algorithms.

UNIT – II   LISTS, STACKS AND QUEUES   **9**

Abstract Data Type (ADT) – The List ADT – The Stack ADT – The Queue ADT

UNIT – III   TREES   **9**
Preliminaries – Binary Trees – The Search Tree ADT – Binary Search Trees – AVL Trees – Tree Traversals – Hashing – General Idea – Hash Function – Separate Chaining – Open Addressing – Linear Probing – Priority Queues (Heaps) – Model – Simple implementations – Binary Heap

UNIT – IV   SORTING   **9**
Preliminaries– Insertion Sort – Shellsort –Heapsort– Mergesort–Quicksort– External Sorting

UNIT – V   GRAPHS   **9**
Definitions– Topological Sort– Shortest-Path Algorithms–Unweighted Shortest Paths– Dijkstra's Algorithm– Minimum Spanning Tree– Prim's Algorithm– Applications ofDepth-First Search–Undirected Graphs –Biconnectivity– Introduction to NP-Completeness

                                                              TOTAL: 45

REFERENCE BOOKS:

1   R. G. Dromey, "How to Solve it by Computer" (Chaps 1-2), Prentice-Hall of India, 2002.
2   M. A. Weiss, "Data Structures and Algorithm Analysis in C", 2nd ed, Pearson Education Asia, 2002.
3   ISRD Group, "Data Structures using C", Tata McGraw Hill, 2007
4   Richard F. Gilberg, Behrouz A. Forouzan, "Data Structures – A Pseudocode Approach with C", ThomsonBrooks / COLE, 1998.

YCT922	**MICROPROCESSORS LAB**	**L**	**T**	**P**	**C**
		0	**0**	**3**	**2**

LIST OF EXERCISES

1. Fundamentals of 8085 Programming

2. Fundamentals of 8086 Programming

3. Interfacing with Input/Output Devices

4. Parallel peripheral Input/output – Timer – Keyboard Controller – Display

5. Controller – Interrupt Controller, Communication Input/Output.

TOTAL: 45

YCT923	**ELECTRICAL ENGINEERING LAB**	**L**	**T**	**P**	**C**
		0	**0**	**3**	**2**

 (Any 10 Experiments)

LIST OF EXPERIMENTS

1 Verification of Ohm's and Krichoff's Law
2 Measurement of Power and Impedance in RL, RC and RLC circuits
3 Swinburn's Test on D.C. Shunt Motor
4 Load Test on D.C.Shunt Motor
5 Load Test on D.C. Shunt Generator
6 Open Circuit and Load Characteristics of Separately Excited DC Generator
7 OC & SC Test on Single Phase Transformer
8 Load Test on Single Phase Transformer
9 Load Test on Single Phase and Three Phase Induction Motor
10 Single Phase Half Wave and Full Wave Rectifiers
11 Study of Passive Filters
12 Study of Voltage Regulator Circuits
13 Study of SMPS and UPS

Total : 45

YCS927   **DATA STRUCTURES LABORATORY**   **L T P C**
                                                           0 0 3 2

LIST OF EXERCISES

Implement the following exercises using C:

1. Array implementation of List Abstract Data Type (ADT)

2. Linked list implementation of List ADT

3. Cursor implementation of List ADT

4. Array implementations of Stack ADT

5. Linked list implementations of Stack ADT

The following three exercises are to be done by implementing the following source files

(a) Program for 'Balanced Paranthesis'

(b) Array implementation of Stack ADT

(c) Linked list implementation of Stack ADT

(d) Program for 'Evaluating Postfix Expressions'

An appropriate header file for the Stack ADT should be #included in (a) and (d)

6. Implement the application for checking 'Balanced Paranthesis' using array implementation of Stack ADT (by implementing files (a) and (b) given above)

7. Implement the application for checking 'Balanced Paranthesis' using linked list implementation of Stack ADT (by using file (a) from experiment 6 and implementing file (c))

8. Implement the application for 'Evaluating Postfix Expressions' using array and linked list implementations of Stack ADT (by implementing file (d) and using file (b), and then by using files (d) and (c))

9. Queues ADT

10. Search Tree ADT - Binary Search Tree

YMA003 **MATHEMATICAL STRUCTURES.** **L T P C**
3 1 0 4

UNIT I SET THEORY 10

Set theory: set notations basic set operations - Venn diagram - laws of set theory principles of inclusion and exclusion - partition - minsets – mathematical induction.

UNIT II PROPOSITIONAL CALCULUS 9

Propositions - Truth table-logical operators – Tautologies and contradiction- Logical equivalences and implications- laws of logic - normal forms- proofs in propositional calculus- Direct proof- conditional conclusion – indirect proof- Inconsistent set of premises.

UNIT III PREDICATE CALCULUS 8

Predicates- statement function – variables and quantifiers- Predicate formulae- Free and bound variables- The Universe of discourse- logical implications and equivalence for quantified statements- Theory of inference of predicate calculus.

UNIT IV RELATIONS AND FUNCTIONS 9

Relations- Properties of relations- Equivalence relation- composition of relations- closure operations on relations- Functions-Injective, subjective, injective functions- composisition of functions – inverse functions.

UNIT V FORMAL LANGUAGES AND AUTOMATA 9

Four classes of grammars- Types of grammars-normal forms-Derivation trees- ambiguous and unambiguous grammars- finite state automata (FSA)- nondeterministic finite state automata(NFSA)- conversion of non-deterministic automata to deterministic finite state automata. Acceptance of a regular set by an FSA construction of a right linear grammar from a finite automata.

L : 45, T : 15, TOTAL : 60

REFERENCE BOOKS:
   1. Kenneth H.Rosen, "Discrete Mathematics and its Applications", Tata Mc Graw Hill, Fourth Edition, 2002.
   2. J.P.Tremblay and Manohar , " Discrete Mathematical Structures with Applications to computer Science ", TMH ,1997.

YIT932   **OBJECT ORIENTED PROGRAMMING**   **L   T   P   C**
                                                                              3   0   0   3

UNIT I   INTRODUCTION   9
Object-oriented paradigm, elements of object oriented programming – Merits and demerits of
OO methodology – C++ fundamentals – data types, operators and expressions, control flow,
arrays, strings, pointers and functions.

UNIT II   PROGRAMMING IN C++   9
Classes and objects – constructors and destructors, operator overloading – inheritance, virtual
functions and polymorphism

UNIT III   FILE HANDLING   9
C++ streams – console streams – console stream classes-formatted and unformatted console
I/O operations, manipulators - File streams - classes file modes file pointers and manipulations
file I/O – Exception handling

UNIT IV   JAVA INTRODUCTION   9
An overview of Java, data types, variables and arrays, operators, control statements, classes,
objects, methods – Inheritance.

UNIT V   JAVA PROGRAMMING   9
Packages and Interfaces, Exception handling, Multithreaded programming, Strings, Input
/Output.

                                                                      TOTAL : 45 PERIODS
REFERENCES:
1. Herbert Schildt, "the Java 2 : Complete Reference", Fourth edition, TMH, 2002 (Unit IV,
    Unit-V)(Chapters 1-11,13,17)
2. Ira Pohl, "Object oriented programming using C++", Pearson Education Asia, 2003
3. Bjarne Stroustrup, "The C++ programming language", Addison Wesley, 2000
4. John R.Hubbard, "Progranning with C++", Schaums outline series, TMH, 2003
5. H.M.Deitel, P.J.Deitel, "Java : how to program", Fifth edition, Prentice Hall of India private
    limited.
6. E.Balagurusamy " Object Oriented Programming with C++", TMH 2/e

YCS924   **COMPUTER ARCHITECTURE**   **L T P C**

                                                                    3 0 0 3

UNIT I   BASIC STRUCTURE OF COMPUTERS   9

Functional units - Basic operational concepts - Bus structures - Software performance – Memory locations and addresses – Memory operations – Instruction and instruction sequencing – Addressing modes – Assembly language – Basic I/O operations – Stacks and queues.

UNIT II   ARITHMETIC UNIT   9

Addition and subtraction of signed numbers – Design of fast adders – Multiplication of positive numbers - Signed operand multiplication and fast multiplication – Integer division – Floating point numbers and operations.

UNIT III   BASIC PROCESSING UNIT   9

Fundamental concepts – Execution of a complete instruction – Multiple bus organization – Hardwired control – Microprogrammed control - Pipelining – Basic concepts – Data hazards – Instruction hazards – Influence on Instruction sets – Data path and control consideration – Superscalar operation.

UNIT IV   MEMORY SYSTEM   9
Basic concepts – Semiconductor RAMs - ROMs – Speed - size and cost – Cache memories - Performance consideration – Virtual memory- Memory Management requirements – Secondary storage.

UNIT V   I/O ORGANIZATION   9

Accessing I/O devices – Interrupts – Direct Memory Access – Buses – Interface circuits – Standard I/O Interfaces (PCI, SCSI, USB).

TOTAL: 45 PERIODS

REFERENCE BOOKS:
1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, 5th Edition "Computer Organization", McGraw-Hill, 2002.
2. William Stallings, "Computer Organization and Architecture – Designing for Performance", 6th Edition, Pearson Education, 2003.
3. David A.Patterson and John L.Hennessy, "Computer Organization and Design: The hardware / software interface", 2nd Edition, Morgan Kaufmann, 2002.
4. John P.Hayes, "Computer Architecture and Organization", 3rd Edition, McGraw Hill, 1998.

YCS933   **DATABASE MANAGEMENT SYSTEMS**   **L T P C**
                                                                3 0 0 3

UNIT I   INTRODUCTION AND CONCEPTUAL MODELING   9
Introduction to File and Database systems- Database system structure – Data Models – Introduction to Network and Hierarchical Models – ER model – Relational Model – Relational Algebra and Calculus.

UNIT II   RELATIONAL MODEL   9
SQL – Data definition- Queries in SQL- Updates- Views – Integrity and Security – Relational Database design – Functional dependences and Normalization for Relational Databases (up to BCNF).

UNIT III   DATA STORAGE AND QUERY PROCESSING   9
Record storage and Primary file organization- Secondary storage Devices- Operations on Files- Heap File- Sorted Files- Hashing Techniques – Index Structure for files –Different types of Indexes- B-Tree - B+Tree – Query Processing.

UNIT IV   TRANSACTION MANAGEMENT   9
Transaction Processing – Introduction- Need for Concurrency control- Desirable properties of Transaction- Schedule and Recoverability- Serializability and Schedules – Concurrency Control – Types of Locks- Two Phases locking- Deadlock- Time stamp based concurrency control – Recovery Techniques – Concepts- Immediate Update- Deferred Update - Shadow Paging.

UNIT V   CURRENT TRENDS   9
Object Oriented Databases – Need for Complex Data types- OO data Model- Nested relations- Complex Types- Inheritance Reference Types - Distributed databases- Homogenous and Heterogenous- Distributed data Storage – XML – Structure of XML- Data- XML Document- Schema- Querying and Transformation. – Data Mining and Data Warehousing.

TOTAL: 45 PERIODS

REFERENCE BOOKS:
1. Abraham Silberschatz, Henry F. Korth and S. Sudarshan- "Database System Concepts", Fourth Edition, McGraw-Hill, 2002.
2. Ramez Elmasri and Shamkant B. Navathe, "Fundamental Database Systems", Third Edition, Pearson Education, 2003.
3. Raghu Ramakrishnan, "Database Management System", Tata McGraw-Hill Publishing Company, 2003.
4. Hector Garcia–Molina, Jeffrey D.Ullman and Jennifer Widom- "Database System Implementation"- Pearson Education- 2000.

YCS935	ALGORITHMS DESIGN TECHNIQUES	L	T	P	C
		3	1	0	4

UNIT I   INTRODUCTION   12
Introduction – Notion of Algorithm - Fundamentals of algorithmic problem solving – Important problem types – Fundamentals of the analysis of algorithm efficiency – analysis frame work – Asymptotic notations – Mathematical analysis for recursive and non-recursive   algorithms.

UNIT II   DIVIDE AND CONQUER METHOD AND GREEDY METHOD   12

Divide and conquer methodology – Merge sort – Quick sort – Binary search – Binary tree traversal – Multiplication of large integers – Strassen's matrix multiplication – Greedy method – Prim's algorithm – Kruskal's algorithm – Dijkstra's algorithm.

UNIT III   DYNAMIC PROGRAMMING   12
Computing a binomial coefficient – Warshall's and Floyd' algorithm – Optimal   binary search tree – Knapsack problem – Memory functions.

UNIT IV   BACKTRACKING AND BRANCH AND BOUND   12
Backtracking – N-Queens problem – Hamiltonian circuit problem – Subset sum problem – Branch and bound – Assignment problem – Knapsack problem –   Traveling salesman problem.

UNIT V   NP-HARD AND NP-COMPLETE PROBLEMS   12
P & NP problems – NP-complete problems – Approximation algorithms for NP-hard problems – Traveling salesman problem – Knapsack problem.

TUTORIAL:15,TOTAL:60 PERIODS

REFERENCE BOOKS:

1. Anany Levitin "Introduction to the Design and Analysis of Algorithms" Pearson Education 2003.
2. Thomas H.Cormen, Charles E.Leiserson, Ronald L.Rivest, "Introduction to algorithms" Prentice Hall 1990.
3. SaraBaase and Allen Van Gelder, "Computer Algorithms – Introduction to Design and Analysis" Pearson education, 2003.
4. A.V.Aho, J.E Hopenfit and J.D.Ullman, "The Design and Analysis of Computer algorithms" Pearson education Asia, 2003.

YCS926   OBJECT ORIENTED PROGRAMMING LABORATORY   L   T   P   C
**   0   0   3   2**

C++
1.   Programs Using Functions
        -          Functions with default arguments
        -          Implementation of Call by Value, Call by Address and Call by Reference

2.   Simple Classes for understanding objects, member functions and Constructors
        -          Classes with primitive data members
        -          Classes with arrays as data members

- Classes with pointers as data members – String Class
- Classes with constant data members
- Classes with static member functions
3. Compile time Polymorphism
   - Operator Overloading including Unary and Binary Operators.
   - Function Overloading
4. Runtime Polymorphism
   - Inheritance
   - Virtual functions
   - Virtual Base Classes
   - Templates
5. File Handling
   - Sequential access
   - Random access

JAVA

6. Simple Java applications
   - for understanding reference to an instance of a class (object), methods
   - Handling Strings in Java
7. Simple Package creation.
   - Developing user defined packages in Java
8. Interfaces
   - Developing user-defined interfaces and implementation
   - Use of predefined interfaces
9. Threading
   - Creation of thread in Java applications
   - Multithreading
10. Exception Handling Mechanism in Java
    - Handling pre-defined exceptions
    - Handling user-defined exceptions

TOTAL : 45 PERIODS

YCS937   DATABASE MANAGEMENT SYSTEMS LAB   **L   T   P   C**
                                                      0   0   3   2

LIST OF EXPERIMENTS
1. Data Definition Language (DDL) commands in RDBMS.
2. Data Manipulation Language (DML) and Data Control Language (DCL) commands in RDBMS.
3. High-level language extension with Cursors.
4. High level language extension with Triggers
5. Procedures and Functions.

6. Embedded SQL.
7. Database design using E-R model and Normalization.
8. Design and implementation of Payroll Processing System.
9. Design and implementation of Banking System.
10. Design and implementation of Library Information System.

TOTAL : 45 PERIODS

YCT931	ALGORITHM DESIGN LABORATORY	L	T	P	C
		0	0	3	2

LIST OF EXPERIMENTS

1. Apply the divide and Conquer technique to arrange a set of numbers using merge sort method.
2. Perform Strassen's matrix multiplication using divide and conquer method.
3. Solve the knapsack problem using greedy method.
4. Construct a minimum spanning tree using greedy method.
5. Construct optimal binary search trees using dynamic programming method of problem solving.
6. Find the solution for traveling salesperson problem using dynamic programming approach.
7. Perform graph traversals.
8. Implement the 8-Queens Problem using backtracking.
9. Implement knapsack problem using backtracking.
10. Find the solution of traveling salesperson problem using backtracking

TOTAL : 45 PERIODS

YMA004	PROBABILITY AND STATISTICS	L	T	P	C
		3	1	0	4

UNIT I   STATISTICS   12
Introduction - Classification and tabulation of statistical data – Diagrammatic and graphical representation of data.

UNIT II   MEASURES OF CENTRAL TENDANCY   12

23

Mean , Median and Mode (Revision) – Range – Quartile deviation – Mean deviation – Standard Deviation – Measures of Skewness

UNIT III   CORRELATION AND REGRESSION   12
Karl Pearson's Coefficient of correlation – Spearman's Rank correlation – Regression lines and co-efficients.

UNIT IV   PROBABILITY & DISTRIBUTIONS   12
Basic concepts - Conditional Probability- Addition and multiplication theorem – Random variables - Characteristics and applications of Binomial, Poisson and Normal distributions - simple problems.

UNIT V   TESTING OF HYPOTHESIS   12
Concept of hypothesis – level of significance – testing difference between mean, proportions (Large and Small)- Chi-square distribution- Applications of test of independence of attributes and Goodness of fit – Testing of population variance. Statistical Quality Control: Introduction-

Control charts for variables and attributes: - $\overline{X}$, R, np, p & c charts.

TOTAL : 60 PERIODS

REFERENCE BOOKS:
1. S.C. Gupta & V.K. Kapoor, "Fundamentals of Mathematical Statistics", Sultan Chand and Sons, New Delhi, 2002
2. Veerarajan T., "Probability, Statistics and Random Processes", Tata McGraw-Hill, New Delhi, 2002.
3. Ronald E. Walpole et al "Probability & Statistics for Engineers & Scientists", Pearson Education, 2002.
4. Jay L.Devore, "Probability and Statistics for Engineering and the Sciences", Thomson Asia Pvt Ltd., Singapore, 2002.

YCS942	**OPERATING SYSTEMS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**

UNIT I   9
Introduction - Mainframe systems – Desktop Systems – Multiprocessor Systems – Distributed Systems – Clustered Systems – Real Time Systems – Handheld Systems - Hardware Protection - System Components – Operating System Services – System Calls – System

Programs - Process Concept – Process Scheduling – Operations on Processes – Cooperating Processes – Inter-process Communication.

UNIT II   **9**
Threads – Overview – Threading issues - CPU Scheduling – Basic Concepts – Scheduling Criteria – Scheduling Algorithms – Multiple-Processor Scheduling – Real Time Scheduling - The Critical-Section Problem – Synchronization Hardware – Semaphores – Classic problems of Synchronization – Critical regions – Monitors.

UNIT III   **9**
System Model – Deadlock Characterization – Methods for handling Deadlocks -Deadlock Prevention – Deadlock avoidance – Deadlock detection – Recovery from Deadlocks - Storage Management – Swapping – Contiguous Memory allocation – Paging – Segmentation – Segmentation with Paging.

UNIT I V   **9**
Virtual Memory – Demand Paging – Process creation – Page Replacement – Allocation of frames – Thrashing - File Concept – Access Methods – Directory Structure – File System Mounting – File Sharing – Protection

UNIT V   **9**
File System Structure – File System Implementation – Directory Implementation – Allocation Methods – Free-space Management. Kernel I/O Subsystems - Disk Structure – Disk Scheduling – Disk Management – Swap-Space Management. Case Study: The Linux System, Windows
                                                                                            TOTAL : 45

REFERENCE BOOKS:
1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, "Operating System Concepts", Sixth Edition, John Wiley & Sons (ASIA) Pvt. Ltd, 2003.
2. Harvey M. Deitel, "Operating Systems", Second Edition, Pearson Education Pvt. Ltd, 2002.
3. William Stallings, "Operating System", Prentice Hall of India, 4th Edition, 2003.
4. Pramod Chandra P. Bhatt – "An Introduction to Operating Systems, Concepts and Practice", PHI, 2003.

YCS943   **INTERNET PROGRAMMING**   **L   T   P   C**
                                                                   3   0   0   3

UNIT I   BASIC NETWORK AND WEB CONCEPTS   **9**
Internet standards – TCP and UDP protocols – URLs – MIME – CGI – Introduction to SGML.

UNIT II   JAVA PROGRAMMING   9

Java basics – I/O streaming – files – Looking up Internet Address - Socket programming – client/server programs – E-mail client – SMTP - POP3 programs – web page retrieval – protocol handlers – content handlers - applets – image handling - Remote Method Invocation.

UNIT III   SCRIPTING LANGUAGES   9

HTML – forms – frames – tables – web page design - JavaScript introduction – control structures – functions – arrays – objects – simple web applications

UNIT IV   DYNAMIC HTML   9

Dynamic HTML – introduction – cascading style sheets – object model and collections – event model – filters and transition – data binding – data control – ActiveX control – handling of multimedia data

UNIT V   SERVER SIDE PROGRAMMING   9

Servlets – deployment of simple servlets – web server (Java web server / Tomcat / Web logic) – HTTP GET and POST requests – session tracking – cookies – JDBC – simple web applications – multi-tier applications.

TOTAL : 45 PERIODS

REFERENCE BOOKS:
1. Deitel, Deitel and Nieto, "Internet and World Wide Web – How to program", Pearson Education Publishers, 2000.
2. Elliotte Rusty Harold, "Java Network Programming", O'Reilly Publishers, 2002
3. R. Krishnamoorthy & S. Prabhu, "Internet and Java Programming", New Age International Publishers, 2004.
4. Thomno A. Powell, "The Complete Reference HTML and XHTML", fourth edition, Tata McGraw Hill, 2003.
5. Naughton, "The Complete Reference – Java2", Tata McGraw-Hill, 3rd edition, 1999.

YCS934	**SOFTWARE ENGINEERING**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**

UNIT I   SOFTWARE PROCESS   9

Introduction –S/W Engineering Paradigm – life cycle models (water fall, incremental, spiral, WINWIN spiral, evolutionary, prototyping, object oriented) - system engineering – computer

based system – verification – validation – life cycle process – development process –system engineering hierarchy.

UNIT II   SOFTWARE REQUIREMENTS   9
Functional and non-functional - user – system –requirement engineering process – feasibility studies – requirements – elicitation – validation and management – software prototyping – prototyping in the software process – rapid prototyping techniques – user interface prototyping - S/W document. Analysis and modeling – data, functional and behavioral models – structured analysis and data dictionary.

UNIT III   DESIGN CONCEPTS AND PRINCIPLES   9
Design process and concepts – modular design – design heuristic – design model and document. Architectural design – software architecture – data design – architectural design – transform and transaction mapping – user interface design – user interface design principles. Real time systems - Real time software design – system design – real time executives – data acquisition system - monitoring and control system. SCM – Need for SCM – Version control – Introduction to SCM process – Software configuration items.

UNIT IV   TESTING   9
Taxonomy of software testing – levels – test activities – types of s/w test – black box testing – testing boundary conditions – structural testing – test coverage criteria based on data flow mechanisms – regression testing – testing in the large. S/W testing strategies – strategic approach and issues - unit testing – integration testing – validation testing – system testing and debugging.

UNIT V   SOFTWARE PROJECT MANAGEMENT   9
Measures and measurements – S/W complexity and science measure – size measure – data and logic structure measure – information flow measure. Software cost estimation – function point models – COCOMO model- Delphi method.- Defining a Task Network – Scheduling – Earned Value Analysis – Error Tracking - Software changes – program evolution dynamics – software maintenance – Architectural evolution. Taxonomy of CASE tools.

TOTAL : 60

REFERENCE BOOKS:
1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, 6th edition, 2004.
2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.
3. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
4. James F Peters and Witold Pedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000.

YCT941	OPERATING SYSTEMS LAB	L	T	P	C
		0	0	3	2

(Implement the following on LINUX platform. Use C for high level language implementation)
1. Shell programming
    a. Command syntax
    b. write simple functions

       c. basic tests
2. Shell programming
       a. loops
       b. patterns
       c. expansions
       d. substitutions
3. Write programs using the following system calls of UNIX operating system:
       a. fork, exec, getpid, exit, wait, close, stat, opendir, readdir
4. Write programs using the I/O system calls of UNIX operating system (open, read, write, etc)
5. Write C programs to simulate UNIX commands like ls, grep, etc.
6. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS and SJF. For each of the scheduling policies, compute and print the average waiting time and average turnaround time

7. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Priority and Round robin. For each of the scheduling policies, compute and print the average waiting time and average turnaround time

8. Implement the Producer – Consumer problem using semaphores.
9. Implement some memory management schemes – I
10. Implement some memory management schemes – II

Example for expt 9 & 10 :
Free space is maintained as a linked list of nodes with each node having the starting byte address and the ending byte address of a free block. Each memory request consists of the process-id and the amount of storage space required in bytes. Allocated memory space is again maintained as a linked list of nodes with each node having the process-id, starting byte address and the ending byte address of the allocated space.

When a process finishes (taken as input) the appropriate node from the allocated list should be deleted and this free disk space should be added to the free space list. [Care should be taken to merge contiguous free blocks into one single block. This results in deleting more than one node from the free space list and changing the start and end address in the appropriate node]. For allocation use first fit, worst fit and best fit.

TOTAL : 45 PERIODS

YCT947   **INTERNET PROGRAMMING LABORATORY**   **L T P C**
                                                                           0 0 3 2

LIST OF EXPERIMENTS

1. Write programs in Java to demonstrate the use of following components Text fields, buttons, Scrollbar, Choice, List and Check box

2. Write Java programs to demonstrate the use of various Layouts like Flow Layout, Border Layout, Grid layout, Grid bag layout and card layout

3. Write programs in Java to create applets incorporating the following features:

    a. Create a color palette with matrix of buttons
    b. Set background and foreground of the control text area by selecting a color from color palette.
    c. In order to select Foreground or background use check box control as radio buttons
    d. To set background images

4. Write programs in Java to do the following.

    a. Set the URL of another server.
    b. Download the homepage of the server.
    c. Display the contents of home page with date, content type, and Expiration date. Last modified and length of the home page.

5. Write programs in Java using sockets to implement the following:
    a. HTTP request
    b. FTP
    c. SMTP
    d. POP3

6. Write a program in Java for creating simple chat application with datagram sockets and datagram packets.

7. Write programs in Java using Servlets:

    a. To invoke servlets from HTML forms
    b. To invoke servlets from Applets

8. Write programs in Java to create three-tier applications using servlets
    a. for conducting on-line examination.
    b. for displaying student mark list. Assume that student information is available in a database which has been stored in a database server.

9. Create a web page with the following using HTML
    To embed a map in a web page
    To fix the hot spots in that map
    Show all the related information when the hot spots are clicked.

10. Create a web page with the following.

    i) Cascading style sheets.
    ii)Embedded style sheets.
    iii)   Inline style sheets.
    iv)   Use your college information for the web pages.

TOTAL : 45 PERIODS

YCT942   **SOFTWARE ENGINEERING LABORATORY**   **L T P C**
                                                                  0 0 3 2

LIST OF EXPERIMENTS

1. Study of case tools   such as rational rose or equivalent tools
2. **Requirements**
    Implementation of requirements engineering activities such as elicitation, validation, management using case tools
3. **Analysis and design**
    Implementation of analysis and design using case tools.
4. Study and usage of software project management tools such cost estimates and scheduling
5. Documentation generators - Study and practice of Documentation generators.
6. Data modeling using automated tools.
7. Practice reverse engineering and re engineering using tools.
8. Exposure towards test plan generators, test case generators, test coverage and software metrics.
9. Meta modeling and software life cycle management.

YCS951   **COMPUTER NETWORKS**   **L   T   P   C**
                                                                        3   0   0   3

UNIT I   DATA COMMUNICATIONS   8
Components – Direction of Data flow – networks – Components and Categories – types of Connections – Topologies –Protocols and Standards – ISO / OSI model – Transmission Media – Coaxial Cable – Fiber Optics – Line Coding – Modems – RS232 Interfacing sequences.

UNIT II   DATA LINK LAYER   10
Error – detection and correction – Parity – LRC – CRC – Hamming code – low Control and Error control - stop and wait – go back-N ARQ – selective repeat ARQ- sliding window – HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 – FDDI - SONET – Bridges.

UNIT III   NETWORK LAYER   10
Internetworks – Packet Switching and Datagram approach – IP addressing methods – Subnetting – Routing – Distance Vector Routing – Link State Routing – Routers.

UNIT IV   TRANSPORT LAYER   9
Duties of transport layer – Multiplexing – Demultiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services (QOS) – Integrated Services.

UNIT V   APPLICATION LAYER   8
Domain Name Space (DNS) – SMTP – FTP – HTTP - WWW – Security – Cryptography.

TOTAL : 45

REFERENCE BOOKS:
1. Behrouz A. Forouzan, "Data communication and Networking", Tata McGraw-Hill, 2004.
2. James F. Kurose and Keith W. Ross, "Computer Networking: A Top-Down Approach Featuring the Internet", Pearson Education, 2003.
3. Andrew S. Tanenbaum, "Computer Networks", PHI, Fourth Edition, 2003.
4. William Stallings, "Data and Computer Communication", Sixth Edition, Pearson Education, 2000.

YCS953   **COMPUTER GRAPHICS**   **L   T   P   C**
                                                                                     3   0   0   3

UNIT I   INTRODUCTION & OVERVIEW OF GRAPHICS SYSTEMS   9
Introduction - Computer Aided Design – Presentation Graphics – Computer Art – Entertainment – Education and Training – Visualization – Image processing – Graphical User Interface – Video Display Devices – Raster Scan Systems – Random Scan Systems – Graphics monitors and workstations – Input Devices – Hard Copy Devices – Graphics Software

UNIT II   OUTPUT PRIMITIVES & ATTRIBUTES OF OUTPUT PRIMITIVES   9
Points and Lines – Line Drawing Algorithms – Loading the frame buffer – Line function – Circle generating algorithms – Ellipse generating algorithms – Filled area primitives – Line attributes – Curve Attributes – Color and Grayscale Levels – Area-Fill attributes – Character Attributes – Inquiry Functions - Antialiasing

UNIT III   TWO DIMENSIONAL GEOMETRIC TRANSFORMATIONS   9
Basic transformations – Matrix representations – Composite Transformations – other transformations - Affine Transformations – Transformation Functions – Raster Methods for Transformations – Viewing Pipeline – Window–to-Viewport coordinate Transformation – Two Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

UNIT IV   GRAPHICAL USER INTERFACES & INTERACTIVE INPUT METHODS   9
The user Dialogue – Input of Graphical Data – Input Functions – Interactive Picture Construction Techniques – Virtual Reality Environments – Three Dimensional Object Representation: polygon surfaces-curved line and surfaces-Quadric surface-super Quadrics - Blobby objects - Bezier curves and surfaces - constructive solid geometry methods – Octrees - BSP trees.

UNIT V   THREE DIMENSIONAL CONCEPTS & APPLICATIONS   9
Three dimensional geometric and modeling transformations - Visible-surface Detection methods-polygon rendering methods-color models and color applications-computer animation..

                                                                                     TOTAL : 45
REFERENCE BOOKS:
   1. Donald Hearn and Pauline Baker, "Computer Graphics C version", Pearson Education, 2003.
   2. Foley, Vandam, Feiner, Huges, "Computer Graphics: Principles & Practice", Pearson Education 2003.
   3. Schaum's Outline of Computer Graphics By Zhigang Xiang and Roy A Plastock , TMH 2000

YCT951   **CLIENT SERVER TECHNOLOGY**   **L   T   P   C**
                                                                                     3   0   0   3

UNIT – I   INTRODUCTION   **9**

Client Server Computing era, Real Client/Server, Fat Servers or fat clients, 2 tier Vs 3 tier, Intergalactic client server, client server for different models, building blocks

UNIT – II   CLIENT/SERVER OPERATING SYSTEMS   9
Anatomy of Server programs, Server needs from OS, Server scalability, Client anatomy, Client needs from OS, Client OS trends , MAC OS, Linux OS, Win OS, Server OS trends , NetWare, Win 2000 Server, OS/2 warp server

UNIT – III   CLIENT SERVER MIDDLEWARE   9
NOS Middleware, global directory services, X.500, LDAP, distributed time services, distributed security services, RPC messaging and peer to peer **,** Sockets, NetWare, NetBIOS, remote procedure call, messaging and queuing, MOM Vs RPC, Evolution of the NOS, DCE , The enterprise NOS, the internet as NOS

UNIT – IV   CLIENT SERVER TRANSACTION PROCESSING   9
ACID Properties, Transaction Models, TP Monitor, TP Monitor and OS, TP Monitor and Transaction Management, TP Monitor Client/ Server Interaction types, Transactional RPC, Queues, TP Lite or TP Heavy, TP Lite versus TP Heavy – Managing Heterogeneous networks, Process Management, client/server invocations, Performance

UNIT – V   CLIENT SERVER AND INTERNET   9
Client server and internet, Web client server, 3 tier client server web style, CGI , the server side of web, CGI and State, SQL database servers, Middleware and federated databases, data warehouses, EIS/DSS to data mining, GroupWare Server , what is GroupWare, components of GroupWare

TOTAL: 45 PERIODS

REFERENCES:
1. Robert Orfali, Dan Harkey & Jeri Edwards, "Essential Client/Server Survival Guide", second edition, John Wiley & Sons, Singapore, 2003.
2. James E. Goldman, Phillip T. Rawles, Julie R. Mariga, "Client/Server Information Systems, A Business Oriented Approach", John Wiley & Sons, Singapore, 2000.
3. Eric J Johnson, "A complete guide to Client / Server Computing", first edition, Prentice Hall, New Delhi, 2001.
4. Smith & Guengerich, "Client /Server Computing", Prentice Hall, New Delhi, 2002

YCS957	COMPUTER NETWORKS LAB	L	T	P	C
		0	0	3	2

LIST OF EXPERIMENTS

1. Applications using TCP Sockets like

         a. Echo client and echo server
         b. File transfer
         c. Remote command execution
         d. Chat
         e. Concurrent server
2. Applications using UDP Sockets like
         a. DNS
         b. SNMP
3. Applications using Raw Sockets like
         a. Ping
         b. Trace route
4. RPC
5. Experiments using simulators like OPNET:
         a. Performance comparison of MAC protocols
         b. Performance comparison of Routing protocols
         c. Study of TCP/UDP performance

TOTAL : 45 PERIODS

YCT952 **COMPUTER GRAPHICS LAB**   L T P C
                                                              0 0 3 2

LIST OF EXPERIMENTS
1. Implementation of Line Drawing Algorithms
         a) DDA
         b) Bresenham
2. Implementation of Bresenham's Circle Generation Algorithm
3. Implementation of Bresenham's Ellipse Generation Algorithm
4. Implementation of Two Dimensional Transformations
5. Implementation of Cohen-Sutherland Line Clipping Algorithm
6. Implementation of Sutherland-Hodgement Polygon Clipping Algorithm
7. Implementation of 2D Window – to – Viewport Conversion
8. Implementation of 3D Transformations
9. Animation Using C Graphics

TOTAL : 45 PERIODS

YCT953 **CLIENT SERVER TECHNOLOGY LAB**   L T P C
                                                                 0 0 3 2
(Any Ten experiments)

1. Develop a program to display the time of a server from a client using TCP / IP.

2. Develop a program to display the time of a server from a client using UDP.

3. Develop a client server application for chat using TCP / IP.

4. Develop a client server application for chat using UDP.

5. Write a program to simulate Domain Name Sever.

6. Write a client program to download a file from http server.

7. Implement a Remote Procedure Call.

8. Implement a File Transfer Protocol.

9. Develop a client server application for emails.

10. Develop a client server banking application with database connectivity.

11. Develop a client server reservation system application with database connectivity.

12. Develop a client server application for implementing a scheduling algorithm for printing 'n' different jobs based on priority.

TOTAL : 45 PERIODS

YCS961	PRINCIPLES OF MANAGEMENT	L	T	P	C
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UNIT I   HISTORICAL DEVELOPMENT   9
Definition of Management – Science or Art – Management and Administration – Development of Management Thought – Contribution of Taylor and Fayol – Functions of Management – Types of Business Organisation.

UNIT II   PLANNING   9
Nature & Purpose – Steps involved in Planning – Objectives – Setting Objectives – Process of Managing by Objectives – Strategies, Policies & Planning Premises- Forecasting – Decision-making.

UNIT III   ORGANISING   9
Nature and Purpose – Formal and informal organization – Organization Chart – Structure and Process – Departmentation by difference strategies – Line and Staff authority – Benefits and Limitations – De-Centralization and Delegation of Authority – Staffing – Selection Process - Techniques – HRD – Managerial Effectiveness.

UNIT IV   DIRECTING   9
Scope – Human Factors – Creativity and Innovation – Harmonizing Objectives – Leadership – Types of Leadership Motivation – Hierarchy of needs – Motivation theories – Motivational Techniques – Job Enrichment – Communication – Process of Communication – Barriers and Breakdown – Effective Communication – Electronic media in Communication.

UNIT V   CONTROLLING   9
System and process of Controlling – Requirements for effective control – The Budget as Control Technique – Information Technology in Controlling – Use of computers in handling the information – Productivity – Problems and Management – Control of Overall Performance –

Direct and Preventive Control – Reporting – The Global Environment – Globalization and Liberalization – International Management and Global theory of Management.

TOTAL : 45 PERIODS

REFERENCE BOOKS:
1. Harold Kooritz & Heinz Weihrich "Essentials of Management", Tata McGraw-Hill, 1998.
2. Joseph L Massie "Essentials of Management", Prentice Hall of India, (Pearson) Fourth Edition, 2003.
3. Tripathy PC And Reddy PN, " Principles of Management", Tata McGraw-Hill, 1999.
4. Decenzo David, Robbin Stephen A, "Personnel and Human Reasons Management", Prentice Hall of India, 1996

YCT961	NETWORK SECURITY	L	T	P	C
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UNIT I   INTRODUCTION   9
Attacks - Services - Mechanisms - Conventional Encryption - Classical And Modern Techniques – Encryption Algorithms - Confidentiality.

UNIT II   PUBLIC KEY ENCRYPTION   9
RSA - Elliptic Curve Cryptography - Number Theory Concepts

UNIT III   MESSAGE AUTHENTICATION   9
Hash Functions - Digest Functions - Digital Signatures - Authentication Protocols.

UNIT IV   NETWORK SECURITY PRACTICE   9
Authentication, Applications - Electronic Mail Security - IP Security - Web Security.

UNIT V   SYSTEM SECURITY   9
Intruders – Viruses – Worms – Firewalls Design Principles – Trusted Systems.

TOTAL : 45 PERIODS

REFERENCE BOOKS:
1. Stallings, Cryptography & Network Security - Principles & Practice, Prentice Hall, 3rd Edition 2002.
2. Bruce, Schneier, Applied Cryptography, 2nd Edition, Toha Wiley & Sons, 1996.
3. Man Young Rhee, "Internet Security", Wiley, 2003.
4. Pfleeger & Pfleeger, "Security in Computing", Pearson Education, 3rd Edition, 2003.

YCT001	MULTIMEDIA SYSTEMS	L	T	P	C
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UNIT-I   INTRODUCTION TO MULTIMEDIA   9

Introduction to making Multimedia- Multimedia Skills and training- Text: Using text in Multimedia-Computer and Text- Font Editing and Design Tools- Hypermedia and Hypertext

UNIT II   MULTIMEDIA FILE HANDLING   9
Sound – Images – Animation - Video

UNIT –III   DIGITAL VIDEO AND IMAGE COMPRESSION   9
Evaluating a compression system - Redundancy and visibility-Video compression techniques-Standardization of an algorithm - The JPEG image compression standard-ITU –T Standards - MPEG   motion video compression standard-DVI Technology.

UNIT-IV   HARDWARE, SOFTWARE AND MULTIMEDIA
AUTHORING TOOLS   9
Multimedia Hardware: Macintosh and Windows production platforms-Hardware Peripherels: Memory and Storage Devices, Input Devices, Output Devices, Communication Devices .Basic Software Tools

UNIT V   MULTIMEDIA AND INTERNET   9
Internetworking –connections -Internet services -Tools for WWW - Designing WWW.

TOTAL: 45 PERIODS

REFERENCE BOOKS:
1. Multimedia: Making It Work, Tay Vaughan, 7th Edition, Tata Mc-Graw Hill. (Unit I, II, IV and V), 2008.
2. Multimedia Systems, John F.Koegel Buford, Pearson edition, 2003. (unit III).
3. Ranjan Parekh, Principles of Multimedia, TMH, 2006.
4. Multimedia: Computing, Communication and applications, Ralf Steinmetz and Klara Nahrstedt, Pearson Edition, 2001.

YCT002   **COMPILER DESIGN**   **L   T   P   C**
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UNIT I   INTRODUCTION TO COMPILING   9
Compilers – Analysis of the source program – Phases of a compiler – Cousins of the Compiler – Grouping of Phases – Compiler construction tools – Lexical Analysis – Role of Lexical Analyzer – Input Buffering – Specification of Tokens.

UNIT II   SYNTAX ANALYSIS   9
Role of the parser –Writing Grammars –Context-Free Grammars – Top Down parsing – Recursive Descent Parsing – Predictive Parsing – Bottom-up parsing – Shift Reduce Parsing – Operator Precedent Parsing – LR Parsers – SLR Parser – Canonical LR Parser – LALR Parser.

UNIT III   INTERMEDIATE CODE GENERATION   9
Intermediate languages – Declarations – Assignment Statements – Boolean Expressions – Case Statements – Back patching – Procedure calls.

UNIT IV   CODE GENERATION   9
Issues in the design of code generator – The target machine – Runtime Storage management –
Basic Blocks and Flow Graphs – Next-use Information – A simple Code generator – DAG
representation of Basic Blocks – Peephole Optimization.

UNIT V   CODE OPTIMIZATION AND RUN TIME ENVIRONMENTS   9
Introduction– Principal Sources of Optimization – Optimization of basic Blocks – Introduction to
Global Data Flow Analysis – Runtime Environments – Source Language issues – Storage
Organization – Storage Allocation strategies – Access to non-local names – Parameter Passing.

TOTAL : 45 PERIODS

REFERENCE BOOKS:
1. Alfred Aho, Ravi Sethi, Jeffrey D Ullman, "Compilers Principles, Techniques and Tools",
   Pearson Education Asia, 2003.
2. Allen I. Holub "Compiler Design in C", Prentice Hall of India, 2003.
3. C. N. Fischer and R. J. LeBlanc, "Crafting a compiler with C", Benjamin Cummings,
   2003.
4. J.P. Bennet, "Introduction to Compiler Techniques", Second Edition, Tata McGraw-Hill,
   2003.

YCT003   PROFESSIONAL ETHICS   L   T   P   C
                                                               3   0   0   3

UNIT I   ENGINEERING ETHICS   9
Senses of 'engineering ethics' – variety of moral issues – types of inquiry – moral dilemmas –
moral autonomy – kohlberg's theory – gilligan's theory – consensus and controversy –
professions and professionalism – professional ideals and virtues – theories about right action –
self-interest – customs and religion – uses of ethical theories.

UNIT II   ENGINEERING AS SOCIAL EXPERIMENTATION   9
Engineering as experimentation – engineers as responsible experimenters – codes of ethics – a
balanced outlook on law – the challenger case study.

UNIT III   ENGINEER'S RESPONSIBILITY FOR SAFETY   9

Safety and risk – assessment of safety and risk – risk benefit analysis – reducing risk – the
three mile island and chernobyl case studies.

UNIT IV   RESPONSIBILITIES AND RIGHTS   9

Collegiality and loyalty – respect for authority – collective bargaining – confidentiality – conflicts
of interest – occupational crime – professional rights – employee rights – intellectual property
rights (ipr) – discrimination

UNIT V   GLOBAL ISSUES   9

Multinational corporations – environmental ethics – computer ethics – weapons development – engineers as managers – consulting engineers – engineers as expert witnesses and advisors – moral leadership – sample code of conduct

TOTAL : 45 PERIODS

REFERENCE BOOKS:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw Hill, New York, 1996.
2. Charles D Fleddermann, "Engineering Ethics", prentice Hall, New Mexico, 1999.
3. Laura Schlesinger, "How Could You Do That: The Abdication of Character, Courage, and Conscience", Harper Collins, New York, 1996.
4. Stephen Carter, "Integrity", Basic Books, New York, 1996.
5. Tom Rusk, "The Power of Ethical Persuasion: From Conflict to Partnership at Work and in Private Life", Viking, New York, 1993

YCS932	PRINCIPLES OF DATA COMMUNICATION	L	T	P	C
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UNIT I   BASICS OF COMMUNICATION   9

Basics of AM, FM and PM Block Diagram, Concepts of AM, FM modulators and demodulators - Pulse modulation systems - Pulse amplitude modulation - Sampling, Quantisation, Quantisation error.

UNIT I   INFORMATION THEORY & CODING   9

Discrete Messages - Concepts of entropy and information rate - Shannon's theorem - channel capacity - Orthogonal signals and their use - Introduction to coding - Coding and Decoding - Algebraic codes, burst error correction codes - Convolution coding and decoding .

UNIT III   DATA TRANSMISSION CONCEPTS   9

Concepts and Terminology- Analog and Digital transmission, Transmission impairments - Transmission media - Synchronous/Asynchronous transmission - Line Configurations - interfacing.

UNIT IV   DATA ENCODING   9

Digital data Digital signals - Variations of NRZ and biphase - Digital data Analog signals - ASK, FSK, PSK, QPSK - Analog Data Digital signals - PCM, DM.

UNIT V   DATA LINK CONTROL   9

Flow control, Error control - HDLC, Multiplexing.

TOTAL : 45

REFERENCE BOOKS:

1. Taub and Schilling, "Principles of Communication Systems", Tata Mc Graw Hill Pub. Co., New Delhi, 2002.
2. William Stallings, "Data and Computer Communications", Sixth Edition, Pearson Education, Prentice Hall of India, New Delhi, 2002.
3. Prakash C. Gupta, "Data Communications", Prentice Hall of India, New Delhi, 2002

YCS008	IMAGE PROCESSING	L	T	P	C
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UNIT I   DIGITAL IMAGE FUNDAMENTALS AND TRANSFORMS   9

Elements of visual perception – Image sampling and quantization Basic relationship between pixels – Basic geometric transformations-Introduction to Fourier Transform and DFT – Properties of 2D Fourier Transform – FFT – Separable Image Transforms -Walsh – Hadamard – Discrete Cosine Transform, Haar, Slant – Karhunen – Loeve transforms.

UNIT II   IMAGE ENHANCEMENT TECHNIQUES   9

Spatial Domain methods: Basic grey level transformation – Histogram equalization – Image subtraction – Image averaging –Spatial filtering: Smoothing, sharpening filters – Laplacian filters – Frequency domain filters : Smoothing – Sharpening filters – Homomorphic filtering.

UNIT III   IMAGE RESTORATION: 9

Model of Image Degradation/restoration process – Noise models – Inverse filtering -Least mean square filtering – Constrained least mean square filtering – Blind image restoration – Pseudo inverse – Singular value decomposition.

UNIT IV   IMAGE COMPRESSION   9

Lossless compression: Variable length coding – LZW coding – Bit plane coding- predictive coding-DPCM.
Lossy Compression: Transform coding – Wavelet coding – Basics of Image compression standards: JPEG, MPEG,Basics of Vector quantization.

UNIT V   IMAGE SEGMENTATION AND REPRESENTATION   9

Edge detection –Thresholding - Region Based segmentation – Boundary representation: chair codes- Polygonal approximation –Boundary segments –boundary descriptors: Simple descriptors-Fourier descriptors - Regional descriptors –Simple descriptors- Texture

TOTAL : 45 PERIODS

REFERENCE BOOKS:
1. Rafael C Gonzalez, Richard E Woods 2nd Edition, Digital Image Processing - Pearson Education 2003.
2. William K Pratt, Digital Image Processing John Willey (2001)
3. Image Processing Analysis and Machine Vision – Millman Sonka, Vaclav hlavac, Roger Boyle, Broos/colic, Thompson Learniy (1999).
4. A.K. Jain, PHI, New Delhi (1995)-Fundamentals of Digital Image Processing.Chanda Dutta Magundar – Digital Image Processing and Applications, Prentice Hall of India, 2000

YCT005	INFORMATION SECURITY	L	T	P	C
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UNIT I   INTRODUCTION   9
History, What is Information Security?, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The Security SDLC

UNIT II   SECURITY INVESTIGATION   9
Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues

UNIT III   SECURITY ANALYSIS   9
Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk

UNIT IV   LOGICAL DESIGN   9
Blueprint for Security, Information Security Poicy, Standards and Practices, ISO 17799/BS 7799, NIST Models, VISA International Security Model, Design of Security Architecture, Planning for Continuity

UNIT V   PHYSICAL DESIGN   9
Security Technology, IDS, Scanning and Analysis Tools, Cryptography, Access Control Devices, Physical Security, Security and Personnel

TOTAL : 45 PERIODS

REFERENCE BOOKS:
1. Michael E Whitman and Herbert J Mattord, "Principles of Information Security", Vikas Publishing House, New Delhi, 2003
2. Micki Krause, Harold F. Tipton, " Handbook of Information Security Management", Vol 1-3 CRC Press LLC, 2004.
3. Stuart Mc Clure, Joel Scrambray, George Kurtz, "Hacking Exposed", Tata McGraw-Hill, 2003
4. Matt Bishop, " Computer Security Art and Science", Pearson/PHI, 2002.

YCS002   MANAGEMENT INFORMATION SYSTEMS   L   T   P   C
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UNIT I   INTRODUCTION   9
Overview – Structure of MIS – Survey of Information System Technology – Hardware, Software and Communication or Information – Storage and Retrieval of Data – Transactions Processing , Office Automation and Information Processing Control Function.

UNIT II   CONCEPTIONAL FOUNDATIONS   9
 Design making Process – Concept of Information – Human as Information Processors – System Concepts – Concepts of Planning and Control – Organizational Structure and Management Concepts.

UNIT III   INFORMATION BASED SUPPORT SYSTEMS   9

Support System for Planning , Control and Decision making – Support System for Management for Knowledge work – Decision Support Systems.

UNIT IV   INFORMATION SYSTEM REQUIREMENTS   9
 Developing a long range Information System – Plan Strategies for the determination of Information requirement – Database requirement – User interface requirements

**UNIT V   DEVELOPMENT,IMPLEMENTATION AND MANAGEMENT OF INFORMATION
                     SYSTEM RESOURCES   9**
Developing and Implementing Application Systems – Quality Assurance and Evaluation of Information Systems – Organization and Management of the Information Resources – Further Development and their Organizational and Social Implications

TOTAL: 45 PERIODS

REFERENCE BOOKS:
1. Gordan B Davis and Megrette H Olson, "Management Information Systems", McGraw Hill, 1997
2. Murdick and Ross, "Information System for Modern Management", Prentice Hall of India, 1997.
3. David Kroenke, "Management Information Systems", McGraw Hill International Editions, 1989.

YCT006   ARTIFICIAL INTELLIGENCE   L   T   P   C
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UNIT I   INTRODUCTION   9
Intelligent Agents – Agents and environments - Good behavior – The nature of environments – structure of agents - Problem Solving - problem solving agents – example problems – searching for solutions – uniformed search strategies - avoiding repeated states – searching with partial information.

UNIT II SEARCHING TECHNIQUES   9
Informed search and exploration – Informed search strategies – heuristic function – local search algorithms and optimistic problems – local search in continuous spaces – online search agents and unknown environments - Constraint satisfaction problems (CSP) – Backtracking search and Local search for CSP – Structure of problems - Adversarial Search – Games – Optimal decisions in games – Alpha – Beta Pruning – imperfect real-time decision – games that include an element of chance.

UNIT III   KNOWLEDGE REPRESENTATION   9
First order logic – representation revisited – Syntax and semantics for first order logic – Using first order logic – Knowledge engineering in first order logic - Inference in First order logic – prepositional versus first order logic – unification and lifting – forward chaining – backward chaining - Resolution - Knowledge representation - Ontological Engineering - Categories and objects – Actions - Simulation and events - Mental events and mental objects

UNIT IV   LEARNING   9
Learning from observations - forms of learning - Inductive learning - Learning decision trees - Ensemble learning - Knowledge in learning – Logical formulation of learning – Explanation based learning – Learning using relevant information – Inductive logic programming - Statistical

learning methods - Learning with complete data - Learning with hidden variable - EM algorithm - Instance based learning - Neural networks - Reinforcement learning – Passive reinforcement learning - Active reinforcement learning - Generalization in reinforcement learning.

UNIT V   APPLICATIONS   9
Communication – Communication as action – Formal grammar for a fragment of English – Syntactic analysis – Augmented grammars – Semantic interpretation – Ambiguity and disambiguation – Discourse understanding – Grammar induction - Probabilistic language processing - Probabilistic language models – Information retrieval – Information Extraction – Machine translation.

TOTAL :45 PERIODS

REFERENCE BOOKS:
1. Stuart Russell, Peter Norvig, "Artificial Intelligence – A Modern Approach", 2nd Edition, Pearson Education / Prentice Hall of India, 2004.
2. Nils J. Nilsson, "Artificial Intelligence: A new Synthesis", Harcourt Asia Pvt. Ltd., 2000.
3. Elaine Rich and Kevin Knight, "Artificial Intelligence", 2nd Edition, Tata McGraw-Hill, 2003.

YCS001	**BUSINESS DATA PROCESSING**	**L**	**T**	**P**	**C**
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UNITI   INTRODUCTION   9
Organizational behaviour- Foundations of Individual behavior-Perception andIndividual decision making-values, attitude and job satisfaction.

UNIT II   GROUPS IN ORGANISATION   9
Foundations of group behaviour- Understanding work teams- Communication –Leadership.

UNIT III   ORGANISATION SYSTEM   9
Foundations of organization structure – Technology – Work design and stress –Human resource policies and practices – Organisational Culture.

UNIT IV   BUSINESS PROCESS RE-ENGINEERING AND IT   9
Basic concepts and the need for BPR-Principles of BPR and the role of IT- BPR and restructuring the organization.

UNIT V   NETWORK ORGANIZATIONS   9
Networked organization- virtual corporations.

TOTAL: 45 PERIODS

REFERENCE BOOKS:
1. Stephen P.Robbins "Organizational behavior", PHI, 12th edition, 2006.
2. Turban,Mclean,wetherbe,"Information Technology for management" John Wiely and Sons, 2001.
3. Ravi Kalakota and Marcia Robinson, "E-Business; Roadmap for Success; Pearson Education, 2000.
4. Vikram Sethi & William R King, "Organizational transformation through business process reengineering", Pearson education, 2006.

YCS016   **DISTRIBUTED OPERATING SYSTEM**   **L   T   P C**
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UNIT I   **9**
Fundamentals – evolution – System Models – Distributed operating System – Issues – Distributed Computing environment Message passing – Introduction – Features – Issues – Synchronization – Buffering – Message – Encoding – Decoding – Process addressing – Failure Handling.

UNIT II   **9**
Remote Procedure calls – Introduction – Model – Transparency – Implementation – Stub Generation – Messages – Marshaling Arguments and results –server Management – Parameter passing Semantics - Call Semantics – Communication Protocols – Complicated RPC's – Client – Server Binding – Exception handling – Security Distributed shared Memory – Introduction – Architecture – Issues – Granularity Structure – Consistency Models – Replacement Strategy – Thrashing.

UNIT III   **9**
Synchronization – Introduction – Clock Synchronization – Event ordering – Mutual Exclusion – Deadlock – Election Algorithms.

UNIT IV   **9**
Resource Management – Introduction – Features – Task Assignment approach – Load-Balancing Approach - Load -Sharing Approach Process Management – Introduction – Process Migration – Threads.

UNIT V   **9**
Distributed File Systems – Introduction – Features – File Models – Accessing Models – Sharing Semantics – Caching Schemes – File Replication – Fault Tolerance – Atomic Transactions – Design Principles Naming – Introduction – Features – Terminologies – Concepts.

                                                   TOTAL : 45 PERIODS

REFERENCE BOOK
1. Pradeep K. Sinha, "Distributed Operating Systems, Concepts and Design" Prentice Hall of India, New Delhi, 2001.
2. Andrew S. Tanenbaum "Distributed Operating Systems", Pearson Education, New Delhi, 2002
3. Mukesh Singhal and Nirajan G.Shivaratri "Advanced Concepts in Operating Systems", Tata McGraw Hill Publishing Company Ltd., New Delhi, 2001

YCS004   **PC TESTING AND TROUBLE SHOOTING**   **L   T   P   C**
                                                                      3   0   0   3

UNIT I 9

PC Hardware Introduction and Overview : Personal computing History, Types of systems, Documentation – Technical Reference Manuals – Hardware Maintenance Manuals.System Teardown and Inspection : Hand Tools, Soldering and Desoldering Tools, Loop Back Connectors, Meters, Logic Probes and Logic Pulsers, Outlet Tester and Chemicals, Disassembly Procedures.

UNIT II 9

Primary System Components : Types of Motherboards, ROM BIOS Compatibility. Bus Slots and I/O Cards. The Processor Bus, the Memory Bus and the Address Bus, Expansion Slots. Types of I/O Buses : The ISA Bus, EISA Bus, VESA Bus and PCI Bus. I/O port Addresses and DMA Channels.PC System Memory : Base Memory, Upper Memory Area, Extended Memory, Expanded Memory, Total Installed Memory Versus Total Usable Memory. Physical Memory and Testing Memory.

UNIT III 9

Floppy Disk Drives : Types of Floppy Drives, Handling Recording Problems, Analysis Floppy Disk Construction, Drive Installation Procedure Trouble Shooting and Correcting Problems, Repairing Floppy Drives.Hard Disk Drives : Hard disk Interfaces and Installation procedure Hard Disk Trouble Shooting and Repair.

UNIT IV 9

System Assembly and Maintenance : System upgrades – Upgrades system Memory, Speeding up a system, upgrading the DOS Version.Preventive Maintenance : Active and Passive Preventive Maintenance Procedure – Power – Protection Systems – Surge suppressions, Phone line surge protectors, Line conditioners, Backup Power, dedicated data backup hardware.

UNIT V 9

Software and Hardware Diagnostic Tools: The power On self test (POST), General purpose Diagnostic Programs – AMI Diag, Checkit Pro-Norton Diagnostics, Qaplus, Norton utilities, Anti-Virus Tools.Operating System and Trouble Shooting : DOS Components, The Basic process, How DOS Loads and starts, File Management, DOS File spared allocation, The DEBUG Program, Memory Resident Software Conflicts.

TOTAL : 45

REFERENCE BOOK
1. Scott Mueller "Upgrading and Repairing PCs", 14th Edition, Pearson Education, New Delhi, 2002.
2. Govindaraju B. "IBM PC and Clones : Hardware, Trouble Shooting and Maintenance", 2nd Edition, Tata McGraw Hill Pub. Co., New Delhi, 2002.

YCS012	**MOBILE COMPUTING**	**L**	**T**	**P**	**C**
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UNIT I   **WIRELESS COMMUNICATION FUNDAMENTALS**   **9**

Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulations – Spread spectrum – MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks.

UNIT II   **TELECOMMUNICATION NETWORKS**   **9**

Telecommunication systems – GSM – GPRS – DECT – UMTS – IMT-2000 – Satellite Networks - Basics – Parameters and Configurations – Capacity Allocation – FAMA and DAMA – Broadcast Systems – DAB - DVB.

UNIT III   **WIRLESS LAN**   **9**

Wireless LAN – IEEE 802.11 - Architecture – services – MAC – Physical layer – IEEE 802.11a - 802.11b standards – HIPERLAN – Blue Tooth.

UNIT IV   **MOBILE NETWORK LAYER**   **9**

Mobile IP – Dynamic Host Configuration Protocol - Routing – DSDV – DSR – Alternative Metrics.

UNIT V   **TRANSPORT AND APPLICATION LAYERS**   **7**

Traditional TCP – Classical TCP improvements – WAP, WAP 2.0.

                              TOTAL : 45

REFERENCE BOOKS:

1. Jochen Schiller, "Mobile Communications", PHI/Pearson Education, Second Edition, 2003. (Unit I Chap 1,2 &3- Unit II chap 4,5 &6-Unit III Chap 7.Unit IV Chap 8- Unit V Chap 9&10.)
2. William Stallings, "Wireless Communications and Networks", PHI/Pearson Education, 2002. (Unit I Chapter – 7&10-Unit II Chap 9)
3. Kaveh Pahlavan, Prasanth Krishnamoorthy, "Principles of Wireless Networks", PHI/Pearson Education, 2003.
4. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer, New York, 2003.

YCS015   **SOFTWARE PROJECT MANAGEMENT**   **L   T   P   C**
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UNIT I INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT   **9**

Project Definition – Contract Management – Activities Covered by Software Project Management – Overview Of Project Planning – Stepwise Project Planning.

UNIT II   PROJECT EVALUATION   9
Strategic Assessment – Technical Assessment – Cost Benefit Analysis – Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation. – software effort estimation

UNIT III   ACTIVITY PLANNING   9
Objectives – Project Schedule – Sequencing and Scheduling Activities – Network Planning Models – Forward Pass – Backward Pass – Activity Float – Shortening Project Duration – Activity on Arrow Networks – Risk Management – Nature Of Risk – Types Of Risk – Managing Risk – Hazard Identification – Hazard Analysis – Risk Planning and Control.

UNIT IV   MONITORING AND CONTROL   9
Resource allocation - identifying and scheduling resources – publishing resource and cost schedule – scheduling sequence - Creating Framework – Collecting The Data – Visualizing Progress – Cost Monitoring – Earned Value – Priortizing Monitoring – Getting Project Back To Target – Change Control – Managing Contracts – Introduction – Types Of Contract – Stages In Contract Placement – Typical Terms Of A Contract – Contract Management – Acceptance.

UNIT V   MANAGING PEOPLE AND ORGANIZING TEAMS   9
Introduction – Understanding Behavior – Organizational Behaviour - Selecting The Right Person For The Job – Instruction In The Best Methods – Motivation – The Oldman – Hackman Job Characteristics Model – Working In Groups – Becoming A Team – Decision Making – Leadership – Organizational Structures – Stress – Health And Safety – Case Studies.

TOTAL:45

TEXT BOOK:
1. Bob Hughes, Mikecotterell, "Software Project Management", Third Edition, Tata McGraw Hill, 2004.

REFERENCE BOOKS:
1. Ramesh, Gopalaswamy, "Managing Global Projects", Tata McGraw Hill,2001.
2. Royce, "Software Project Management", Pearson Education, 1999.
3. Jalote, "Software Project Management in Practice", Pearson Education,2002.
4. Robert T. Futrell, Donald F. Shefer and Linda I. Shefer, "Quality Software Project Management", Pearson Education, 2003

YCS014	ADVANCED DBMS	L	T	P	C
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UNIT I   **DATABASE MANAGEMENT**   **9**

Relational Data Model – SQL - Database Design - Entity-Relationship Model – Relational Normalization – Embedded SQL – Dynamic SQL – JDBC – ODBC.

UNIT II   **ADVANCED DATABASES**   **9**

Object Databases - Conceptual Object Data Model – XML and Web Data – XML Schema – Distributed Data bases – OLAP and Data Mining – ROLAP and MOLAP

UNIT III   **QUERY AND TRANSACTION PROCESSING**   **9**

Query Processing Basics – Heuristic Optimization – Cost, Size Estimation - Models of Transactions – Architecture – Transaction Processing in a Centralized and Distributed System – TP Monitor.

UNIT IV   **IMPLEMENTING AND ISOLATION**   **9**

Schedules – Concurrency Control – Objects and Semantic Commutativity – Locking – Crash, Abort and Media Failure – Recovery – Atomic Termination – Distributed Deadlock – Global Serialization – Replicated Databases – Distributed Transactions in Real World.

UNIT V   **DATABASE DESIGN ISSUES**   **9**

Security – Encryption – Digital Signatures – Authorization – Authenticated RPC - Integrity - Consistency - Database Tuning - Optimization and Research Issues.

                                                    TOTAL 45

REFERENCE BOOKS:

1. Philip M. Lewis, Arthur Bernstein, Michael Kifer, "Databases and Transaction Processing: An Application-Oriented Approach", Addison-Wesley, 2002
2. R. Elmasri and S.B. Navathe, Fundamentals of Database Systems, 3rd Edition, Addison Wesley, 2004
3. Abraham Silberschatz, Henry. F. Korth, S.Sudharsan, Database System Concepts, 4th Edition., Tata McGraw Hill, 2004
4. Raghu Ramakrishnan & Johannes Gehrke, "Database Management Systems", 3rd Edition, TMH, 2003

YCT954

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WEB TECHNOLOGY

UNIT I INTRODUCTION   **9**

Internet Principles – Basic Web Concepts – Client/Server model – Retrieving data from Internet – HTML and Scripting Languages – Standard Generalized Mark-up Language –Next Generation Internet – Protocols and applications.

UNIT II COMMON GATEWAY INTERFACE PROGRAMMING   **9**
HTML forms – CGI Concepts – HTML tags Emulation – Server-Browser communication – Email generation – CGI Client side Applets – CGI Server Side Applets – Authorization and security.

UNIT III SOCKET PROGRAMMING   **9**
Streaming – Networking principles – sockets – protocol handlers – content handlers – multicasting – Remote Method Invocation – activation – Serialization - Marshal Streams.

UNIT IV SERVER SIDE PROGRAMMING   **9**
Dynamic web content – cascading style sheets – DHTML – XML - Server side includes - communication – Active and Java Server Pages - Firewalls – proxy servers.

UNIT V ONLINE APPLICATIONS   **9**
Simple applications – On-line databases – monitoring user events – plug-ins – database connectivity – Internet Information Systems - EDI application in business – Internet commerce – Customization of Internet commerce .

                                                                    TOTAL : 45 PERIODS

REFERENCES:
1. Rashim Mogha, Preetham.V.V., " Java Web Services Programming", Wiley Dreamtech, New Delhi, 2002.
2. Deitel ," XML How to Program", first edition, Pearson Education, USA, 2002.
3. Jason Hunter, William Crawford, "Java Servlet Programming", O' Reilly Publications, USA, 1998.
4. Bhanu Pradhap, " Understanding Active Server Pages ", Cyber Tech Publications, New Delhi, 2001.
5. James Conard,Patrick Dengler,Brain Franics Et Al, " Introducing .NET ", Shroff Publishers, New Delhi, 2001.

YCT007   **NEURAL NETWORKS**   **L T P C**
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UNIT – I   INTRODUCTION TO NEURAL NETWORKS   (9)
Differences between Biological and Artificial Neural networks – Typical Architecture, Common Activation Functions, McCulloch – Pitts Neuron, Simple Neural Nets for Pattern Classification, Linear Separability – Hebb Net, Perceptron, Adaline, Madaline – Architecture, Algorithm and Simple Applications.

UNIT – II   PATTERN ASSOCIATION   (9)
Training Algorithms for pattern association – Heb rule and Delta rule, Heteroassociatiive, autoassociative and iterative autoassociative Net, Bidirectional Associative Memory – Architecture, Algorithm and Simple Applications.

UNIT – III   NEURAL NETWORKS BASED ON COMPETITION   (9)
Kohonen Self Organizing Maps, Learning Vector Quantization, Counter Propagation – Architecture, Algorithm and Applications.

UNIT – IV   ADAPTIVE RESONANCE AND BACKPROPAGATION NEURAL NETOWRKS (9)
ART1 and ART2 – Basic Operation and Algorithm, Standard Back propagation Architecture, derivation of Learning Rules, Boltzmann Machine Learning – Architecture, Algorithm and Simple Applications.

UNIT – V   APPLICATIONS OF NEURAL NETWORKS   (9)
Applications of Neural Networks: Pattern Recognition – Image Compression – Communication – Control Systems.

                                                                    Total: 45

REFERENCES
1. Sivandam S N, Sumathi S, Deepa S N, "Introduction to Neural Networks using Matlab 6.0", Tata McGrawHill Publications, New Delhi, 2005.
2. Laurene Faysett, "Fundamentals of Neural Networks", Pearson Education India, New Delhi, 2004.
3. Limin Fu, "Neural Networks in Computer Intelligence", Tata McGrawHill Publications, New Delhi, 2006.

YCS017	**FUZZY LOGIC**	L	T	P	C
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UNIT – I   **9**

Introduction – Background – Uncertainty and Imprecision – Statistics and Random Processes – Uncertainly in Information – Fuzzy Sets and Membership – Chance versus Ambiguity – Classical Sets and Fuzzy Sets – Classical Sets – Fuzzy Sets – Sets as Points in Hypercubes.

UNIT – II   **9**

Classical Relations and Fuzzy Relations – Cartesian product – Crisp Relations – Fuzzy Relations – Tolerance and Equivalence Relations – Fuzzy Tolerance and Equivalence Relations – Value Assignments.

UNIT – III   **9**

Membership Functions – Features of the Membership Functions – Standard Forms and Boundaries – Fuzzification – Membership Value Assignments – Fuzzy to Crisp Conversions – Lambda Cuts for Fuzzy Sets – Lambda Cut for Fuzzy Relations – Defuzzification Methods – Summary – References – Problems.

UNIT – IV   **9**

Fuzzy Arithmetic, Numbers, Vectors and the Extension Principle – Extension Principle – Fuzzy Numbers – Interval Analysis in Arithmetic – Approximate Methods of Extension – Fuzzy Vectors – Classical Logic and Fuzzy logic – Classical Predicate Logic – Fuzzy Logic – Approximate Reasoning – Fuzzy Tautologies, contradictions, Equivalence, and Logical Proofs – other Forms of the Implication Operation – Other Forms of the Composition Operation.

UNIT – V   **9**

Fuzzy Rule Based systems – Natural Language – Linguistic Hedges – Rules Based Systems – Graphical Techniques of Inference – Fuzzy Classification - Classification by Equivalence Relations – Cluster Analysis – cluster Validity – c-Means Clustering – Classification Metric – Hardening the Fuzzy c-Partition – Similarity Relations from Clustering.

REFERENCE BOOKS:

1. Timothy J Ross, "Fuzzy Logic with Engineering Applications", McGraw – Hill, Inc, 1995.

YCS011   **DECISION SUPPORT SYSTEMS**

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UNIT – I   DECISION-MAKING AND COMPUTERIZED SUPPORT   9

Management Support Systems: An Overview, Decision Making, Systems, Modeling, and Support.

UNIT – II   DECISION SUPPORT SYSTEMS   9

An Overview, Data Management: Warehousing, Access, and Visualization , Modeling and Analysis , Knowledge based Decision Support and Artificial Intelligence , User Interface and Decision Visualization Applications , Constructing a Decision Support System and DSS Research.

UNIT – III   COLLABORATION, COMMUNICATION, AND ENTERPRISE   9
                        SUPPORT SYSTEMS

Networked Decision Support: The Internet, Intranets, and Collaborative Technologies, Group Decision Support Systems, Executive Information and Support Systems.

UNIT – IV   FUNDAMENTALS OF EXPERT SYSTEMS AND INTELLIGEN SYSTEMS   9

Fundamentals of Expert Systems, Knowledge Acquisition and Validation, Knowledge Representation, Inferences, Explanations, and Uncertainty, Building Expert Systems: Process and Tools.

UNIT – V CUTTING-EDGE DECISION SUPPORT TECHNOLOGIES   9

Neural Computing: The Basics, Neural Computing Applications, Genetic Algorithms, Fuzzy Logic, and Hybrid Intelligent Systems , Intelligent Agents and Creativity , Implementing and Integrating Management Support Systems , Organizational and Societal Impacts of Management Support Systems.

TOTAL : 45 PERIODS

REFERENCES:
1. Efraim Turban, Jay E. Aronson, "Decision Support Systems and Intelligent Systems", Prentice Hall, New Delhi, 2004
2. George Marakas, "Decision Support Systems in the 21st Century", Prentice Hall, New Delhi, 2003
3. Robert J Thierauf, "User Oriented Decision Support Systems", Prentice Hall, New Delhi, 1998

YCT008   **ADVANCED SOFTWARE ENGINEERING**   **L T P C**
                                                 3 0 0 3

UNIT – I   INTRODUCTION TO SOFTWARE ENGINEERING   (8)
Introduction - Socio-technical Systems - Dependability - Software Processes - Software Requirements - RE Processes - Systems Models - Critical Systems Specification - Formal Specification

**UNIT – II   DESIGN   ENGINEERING   AND   SOFTWARE   DEVELOPMENT
               METHODOLOGIES   (10)**
Architectural Design - Distributed Systems Architecture - Application Architectures Object-oriented Design - Real-time Systems - User Interface Design - Iterative Software Development - Software Reuse - CBSE - Critical Systems Development Software Evolution

UNIT – IV   SOFTWARE MANAGEMENT   (9)
Verification and Validation - Software Testing - Critical Systems Validation - Managing People - Software Cost Estimation - Quality Management - Process Improvement - Configuration Management

UNIT – V   ALTERNATIVE PARADIGMS   (9)
Extreme Programming - Agile Software Engineering - Clean Room Software Engineering - Introduction to Formal Methods - soft systems

UNIT – VI   ADVANCED SOFTWARE ENGINEERING PROCESS   (9)
Software Process Improvement - Software Economics - Software Quality - Software Metrics - Software Maintenance - Risk management - Requirement Engineering

                                                    TOTAL: 45 PERIODS
REFERENCES:
1. Software Engineering, Ian Sommerville, 8th Edition, Addison-Wesley,2006.
2. Software Engineering: A Practitioner's Approach, 6/e, Roger S Pressman,McGraw Hill, 2005.