ANNA UNIVERSITY , CHENNAI
AFFILIATED INSTITUTIONS
CURRICULAM AND SYLLABI - REGULATIONS – 2010
B.Sc – COMPUTER SCIENCE (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
YCS921	Object oriented programming	3	0	0	3
YCS922	Basics of Electrical Engineering	3	0	0	3
YCS923	Data Structures	3	0	0	3
YCS924	Computer Architecture	3	0	0	3
PRACTICALS					
YCS926	Object oriented programming Laboratory - I	0	0	3	2
YCS927	Data Structures Laboratory	0	0	3	2
	TOTAL CREDITS				**23**

SEMESTER - III

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YMA005	Numerical methods	3	1	0	4
YCS931	Object Oriented Programming -II	3	0	0	3
YCS932	Principles of Data Communications	3	0	0	3
YCS933	Database Management Systems	3	0	0	3
YCS934	Software Engineering	3	0	0	3
YCS935	Algorithm Design Techniques	3	0	0	3
PRACTICALS					
YCS937	Database Management Systems Laboratory	0	0	3	2
YCS938	Object Oriented Programming Laboratory - II	0	0	3	2
	TOTAL CREDITS				**23**

SEMESTER - IV

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YMA010	Operations Research	3	1	0	4
YCS941	Operating Systems	3	0	0	3
YCS942	Internet Programming	3	0	0	3
YCS943	Microprocessors	3	0	0	3
YCS944	Compiler Design	3	0	0	3
E1	Elective – I	3	0	0	3
PRACTICALS					
YCS946	Internet Programming Laboratory	0	0	3	2
YCS947	Microprocessors Lab	0	0	3	2
	TOTAL CREDITS				**23**

SEMESTER - V

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YCS951	Computer Networks	3	0	0	3
YCS952	Artificial Intelligence	3	0	0	3
YCS953	Computer Graphics	3	0	0	3
YCS954	Multimedia Systems	3	0	0	3
E2	Elective – II	3	0	0	3
E3	Elective – III	3	0	0	3
PRACTICALS					
YCS956	Graphics and Multimedia Lab	0	0	3	2
YCS957	Computer Networks Lab	0	0	3	2
	TOTAL CREDITS				**22**

SEMESTER - VI

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YCS961	Principles of Management	3	0	0	3
YCS962	Information Security	3	0	0	3
E4	Elective – IV	3	0	0	3
E5	Elective – V	3	0	0	3
E6	Elective – VI	3	0	0	3
PRACTICALS					
YCS965	Project Work	0	0	12	6
	TOTAL CREDITS				**21**

TOTAL CREDITS EARNED TO BE AWARD FOR THE DEGREE = 135

LIST OF ELECTIVES

SEMESTER – IV

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YCS001	Business Data Processing	3	0	0	3
YCS002	Management Information Systems	3	0	0	3
YCS003	Professional Ethics	3	0	0	3
YCS004	PC Testing and Trouble Shooting	3	0	0	3

SEMESTER – V

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YCS005	Client Server Computing	3	0	0	3
YCS006	Advanced Communication Technology	3	0	0	3
YCS007	Software Testing	3	0	0	3
YCS008	Image Processing	3	0	0	3
YCS009	Visual Programming	3	0	0	3

SEMESTER – VI

COURSE CODE	COURSE TITLE	L	T	P	C
THEORY					
YCA961	Cryptography and Network Security	3	0	0	3
YCS011	Decision Support Systems	3	0	0	3
YCS012	Mobile Computing	3	0	0	3
YCS013	Wireless Technology	3	0	0	3
YCS014	Advanced DBMS	3	0	0	3
YCS015	Software Project Management	3	0	0	3
YCS016	Distributed Operating Systems	3	0	0	3
YCS017	Fuzzy Logic	3	0	0	3

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
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 PERIODS

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.

YMA001 APPLIED MATHEMATICS I

	L	T	P	C
	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 $\text{Sin}^n\theta$; $\text{Cos}^n\theta$ 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 PERIODS

REFERENCE BOOKS :

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

YCS911 DIGITAL PRINCIPLES

	L	T	P	C
	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 :45PERIODS

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 PERIODS

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 Structures elements 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 LABORATORY	L	T	P	C
		0	0	3	2

LIST OF EXERCISES

1. Word Processing
2. Spreadsheet
3. Power Poing
4. Factorial
5. Fibonacci
6. Prime Generation
7. Removal of duplicates from an ordered Array

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

Using case studies on: Roots of a quadratic equation, Measures of location – Matrix Operations – Evaluation of trigonometric functions – Pay roll problems. String operations like substring, concatenation, finding a string from a given 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 PERIODS

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
3. Students", Gems Publications, 2006.
4. 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 - Necessary condition   -   Cauchy Riemann 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– Transform of periodic function-Inverse Laplace transform- Convolution theorem-Solution of linear ODE of second order with constant co- efficient, using Laplace transformation

LECTURE:45 TUTORIALS:15 TOTAL :60 PERIODS

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)

YCS921	OBJECT ORIENTED PROGRAMMING	L	T	P	C
		3	0	0	3

UNIT I   9
PRINCIPLES OF OOP: Software Crisis. Software Evolution .Programming Paradigms. Object Oriented Technology – Basic concepts and benefits of OOP . Application of OOP, OOP languages.

INTRODUCTION TO C++: History of C++ , structure of C++, application of C++ ,tokens, keywords, identifiers, basic data types, derived data types, derived data types, symbolic constant, dynamic initialization, reference variables, scope resolution oprator,type modifiers, type casting operators and control statements, input and output statements in C++, function prototyping, function components, passing parameters call by reference, return by reference, inline function, default arguments, over loaded function introduction friend function .

UNIT II   9
CLASSES AND OBJECTS: Class specification, Member function definition, nested member function, access qualifiers, static data members and, member functions. Instance creation. Array of objects. Dynamic objects, Static Objects, Objects as arguments. Returning objects.

CONSTRUCTORS AND DESTRUCTORS: Constructors- Parameterized constructors, Overloaded Constructors, Constructors with default arguments, copy constructors, Dynamic Constructors, dynamic initialization using Constructors. Destructors.

UNIT III   9
OPERATOR OVERLOADING: Operator function-overloading unary and binary operators, overloading the operator using Friend function, Stream operator overloading, Data conversion.

INHERITANCE: Defining derived classes. Single Inheritance-Protected data with private inheritance. Multiple Inheritance. Multi Level Inheritance. Hierarchical Inheritance. Hybrid Inheritance. Multipath Inheritance .Constructors in derived and base Class. Template in Inheritance. Abstract classes. Virtual function and Dynamic polymorphism. Virtual destructor. Nested Classes.

UNIT IV   **FUNCTIONS IN C++ :**   9
Virtual functions- need for Virtual function, Pointer to derived class objects, Definition of Virtual functions, Array of Pointer to base class objects, Pure Virtual functions , Abstract

classes , Virtual Destructors, Generic Programming with Templates. Introduction, function templates, overloaded function templates, user defined templates arguments, class templates, Inheritance of class templates.

UNIT V   STREAM   9
Streams in C++, Stream classes, formatted and unformatted data, Manipulators, User defined Manipulators, file stream, file pointer and manipulation, file open and close, sequential and random access.

EXCEPTION HANDLING: Principle of Exception handling, Exception handling mechanism, Multiple catch, Nested try, rethrowing the Exception.

TOTAL: 45 PERIODS

REFERENCE BOOKS :
1. Robert Lafore, "Object Oriented Programming in C++", Galgotia Publication Pvt. Ltd,4th edition, New Delhi, 2002
2. Herbert Schildt , " C++ : The Complete Reference",TMH ,NewDelhi,2003.
3. Ashok N Kamathane, "Object Oriented Programming with ANSI & Turbo C++", Pearson Education, New Delhi, 2003.
4. Bjarne Stroustrup," C++ Programming language", Pearson Education, New Delhi, 2001.
5. Stanley B Lippman and Josee Lajoie, "C++ Primer", Pearson Education, ND, 2001.
6. Venugopal K R, Rajkumar Buyya and Ravishankar T," Mastering C++", TMH, ND, 2006.

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 ACHINES 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 constructionand 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 of Depth - First Search – Undirected Graphs –Biconnectivity – Introduction to NP-Completeness

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 Pseudo code Approach with C", ThomsonBrooks / COLE, 1998.

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 – Micro programmed 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
2. Organization", McGraw-Hill, 2002.
3. William Stallings, "Computer Organization and Architecture – Designing for

4. Performance", 6th Edition, Pearson Education, 2003.

5. David A.Patterson and John L.Hennessy, "Computer Organization and Design: The hardware / software interface", 2nd Edition, Morgan Kaufmann, 2002.

6. John P.Hayes, "Computer Architecture and Organization", 3rd Edition, McGraw Hill, 1998.

YCS926   **OBJECT ORIENTED PROGRAMMING LABORATORY - I**   **L   T   P   C**

                                                                          0   0   3   2

LIST OF EXERCISES

1 Implementation of Classes and Objects

2 Implementation of Function Overloading

3 Implementation of Inline function

4 Implementation of Call by Value and Call by reference

5 Implementation of Function Overloading

6 Implementation of Static data and member function

7 Implementation of Objects as arguments

8 Implementation of Array of Objects

9 Implementation of Static and Dynamic Objects

10 Implementation of Constructor and Destructor

11 Implementation of Overloading Unary operators

12 Implementation of Overloading Binary operators

13 Implementation of Operator Overloading using friend function

14 Implementation of Data conversion

15 Implementation of all types of Inheritance

16 Implementation of Virtual functions

17 Implementation of Template functions and template class

18 Implementation of Sequential and Random accessing of Files

19 Implementation of Exception Handling mechanism

                                                      TOTAL : 45 PERIODS

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

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 Queue ADT

10 Search Tree ADT - Binary Search Tree

11 Heap Sort

12 Quick Sort

TOTAL: 45 PERIODS

YMA005   **NUMERICAL METHODS** | L | T | P | C |
| 3 | 1 | 0 | 4 |

UNIT I   SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS   9+3
Linear interpolation methods (method of false position) – Newton's method – Statement of Fixed Point Theorem – Fixed point iteration: x=g(x) method – Solution of linear system by Gaussian elimination and Gauss-Jordon methods- Iterative methods: Gauss Jacobi and Gauss-Seidel methods- Inverse of a matrix by Gauss Jordon method – Eigenvalue of a matrix by power method.

UNIT II   INTERPOLATION AND APPROXIMATION   9+ 3
Lagrangian Polynomials – Divided differences – Interpolating with a cubic spline – Newton's forward and backward difference formulas.

UNIT III   NUMERICAL DIFFERENTIATION AND INTEGRATION   9+ 3
Derivatives from difference tables – Divided differences and finite differences –Numerical integration by trapezoidal and Simpson's 1/3 and 3/8 rules – Romberg's method – Two and Three point Gaussian quadrature formulas – Double integrals using trapezoidal and Simpson's rules.

UNIT IV   INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL
           EQUATIONS   9+ 3
Single step methods: Taylor series method – Euler and modified Euler methods – Fourth order Runge – Kutta method for solving first and second order equations – Multistep methods: Milne's and Adam's predictor and corrector methods.

UNIT V   BOUNDARY VALUE PROBLEMS IN ORDINARY AND PARTIAL
           DIFFERENTIAL EQUATIONS   9+ 3
Finite difference solution of second order ordinary differential equation – Finite difference solution of one dimensional heat equation by explicit and implicit methods – One dimensional wave equation and two dimensional Laplace and Poisson equations.

TUTORIAL :15   TOTAL : 60 PERIODS

REFERENCE BOOKS:
1. Gerald, C.F, and Wheatley, P.O, "Applied Numerical Analysis", Sixth Edition, Pearson Education Asia, New Delhi, 2002.
2. Kandasamy, P., Thilagavathy, K. and Gunavathy, K., "Numerical Methods", S.Chand Co. Ltd., New Delhi, 2003
3. Balagurusamy, E., "Numerical Methods", Tata McGraw-Hill Pub.Co.Ltd, New Delhi, 1999.
4. Burden, R.L and Faires, T.D., "Numerical Analysis", Seventh Edition, Thomson Asia Pvt. Ltd., Singapore, 2002

YCS931   **OBJECT ORIENTED PROGRAMMING -II**   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
REFERENCE BOOKS

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

YCS932	PRINCIPLES OF DATA COMMUNICATIONS	L	T	P	C
		3	0	0	3

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 II   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 PERIODS

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

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.

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 : 45 PERIODS

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.

YCS935   **ALGORITHM DESIGN TECHNIQUES**   **L   T   P   C**
                                                             3   0   0   3

UNIT I   INTRODUCTION   9
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   9
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   9
Computing a binomial coefficient – Warshall's and Floyd' algorithm – Optimal   binary search tree – Knapsack problem – Memory functions.

UNIT IV   BACKTRACKING AND BRANCH AND BOUND   9
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   9
P & NP problems – NP-complete problems – Approximation algorithms for NP-hard problems – Traveling salesman problem – Knapsack problem.

TOTAL : 45 PERIODS

REFERENCE BOOK:
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.

YCS937   **DATABASE MANAGEMENT SYSTEMS LABORATORY**   **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

YCS938   **OBJECT ORIENTED PROGRAMMING LABORATORY-II**   **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

YMA010	OPERATIONS RESEARCH	L	T	P	C
		3	1	0	4

UNIT I   LINEAR PROGRAMMING: **12**
Principal components of decision problem – Modeling phases – LP Formulation and graphic solution – Resource allocation problems – Simplex method – Sensitivity analysis.

UNIT II.   DUALITY AND NETWORKS: **12**
Definition of dual problem – Primal – Dual relation ships – Dual simplex methods – Post optimality analysis – Transportation and assignment model shortest route problem.

UNIT III   INTEGER PROGRAMMING: **12**
Cutting plan algorithm – Branch and bound methods, Multistage (Dynamic) programming.

UNIT IV   CLASSICAL OPTIMISATION THEORY: **12**
Unconstrained external problems, Newton – Ralphson method – Equality constraints – Jacobean methods – Lagrangian method – Kuhn – Tucker conditions – Simple problems.

UNIT V   OBJECT SCHEDULING: **12**
Network diagram representation – Critical path method – Time charts and resource leveling – PERT.

TOTAL : 60 PERIODS

REFERNECE BOOKS:
1. Anderson 'Quantitative Methods for Business', 8th Edition, Thomson Learning, 2002.
2. Winston 'Operation Research', Thomson Learning, 2003.
3. H.A.Taha, 'Operation Research', Prentice Hall of India, 2002.
4. Vohra, 'Quantitative Techniques in Management', Tata McGraw Hill, 2002.
5. Anand Sarma, 'Operation Research', Himalaya Publishing House, 2003.

YCS941   **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 IV   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 PERIODS

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.

YCS942   **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.

YCS943   **MICROPROCESSORS**   L   T   P   C
                                                                          3   0   0   3

UNIT I   THE 8085 MICROPROCESSOR   9
Introduction to 8085 – Microprocessor architecture – Instruction set – Programming the 8085 –
Code conversion.

UNIT II   8086 SOFTWARE ASPECTS   9
Intel 8086 microprocessor – Architecture – Instruction set and assembler directives –
Addressing modes – Assembly language programming – Procedures – Macros – Interrupts and
interrupt service routines.

UNIT III   8086 SYSTEM DESIGN   9
8086 signals and timing – MIN/MAX mode of operation – Addressing memory and I/O –
Multiprocessor configurations – System design using 8086

UNIT IV   I/O INTERFACING   9
Memory Interfacing and I/O interfacing - Parallel communication interface – Serial
communication interface – Timer – Keyboard /display controller – Interrupt controller – DMA
controller – Programming and applications.

UNIT V   MICROCONTROLLERS   9
Architecture of 8051 – Signals – Operational features – Memory and I/O addressing – Interrupts
– Instruction set – Applications.

TOTAL : 45 PERIODS

REFERENCE BOOKS

1. Ramesh S.Gaonkar, "Microprocessor - Architecture, Programming and Applications with the
   8085", Penram International publishing private limited, fifth edition.
   UNIT-1: – Chapters 3,5,6 and programming examples from chapters 7-10)
2. A.K. Ray & K.M.Bhurchandi, "Advanced Microprocessors and peripherals- Architectures,
   Programming and Interfacing", TMH, 2002 reprint.
   (UNITS 2 to 5: – Chapters 1-6, 7.1-7.3, 8, 16)
3. Douglas V.Hall, "Microprocessors and Interfacing: Programming and Hardware", TMH, Third
   edition
4. Yu-cheng Liu, Glenn A.Gibson, "Microcomputer systems: The 8086 / 8088 Family
   architecture, Programming and Design", PHI 2003.
5. Mohamed Ali Mazidi, Janice Gillispie Mazidi, "The 8051 microcontroller and embedded
   systems", Pearson education, 2004.

YCS944   **COMPILER DESIGN**   L   T   P   C
                                                                         3   0   0   3

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.

LECTURE: 45 TUTORIAL: 15 TOTAL: 60 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

YCS946   **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:

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

4.   Write programs in Java to do the following.

          Set the URL of another server.
          Download the homepage of the server.
          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:
         HTTP request FTP SMTP POP3

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

7.   Write programs in Java using Servlets:

          To invoke servlets from HTML forms
           To invoke servlets from Applets

8.   Write programs in Java to create three-tier applications using servlets
         for conducting on-line examination.
          f or 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

29

YCS947	MICROPROCESSORS LAB	L	T	P	C
		0	0	3	2

LIST OF EXPERIMENTS

1. Programming with 8085 – 8-bit / 16-bit multiplication/division using repeated addition/subtraction
2. Programming with 8085-code conversion, decimal arithmetic, bit manipulations.
3. Programming with 8085-matrix multiplication, floating point operations
4. Programming with 8086 – String manipulation, search, find and replace, copy operations,
   a. Sorting. (PC Required)
5. Using BIOS/DOS calls: Keyboard control, display, file manipulation. (PC Required)
6. Using BIOS/DOS calls: Disk operations. (PC Required)
7. Interfacing with 8085/8086 – 8255, 8253
8. Interfacing with 8085/8086 – 8279,8251
9. 8051 Microcontroller based experiments – Simple assembly language programs (cross assemble required).
10. 8051 Microcontroller based experiments – Simple control applications (cross assembler required).

TOTAL: 45 PERIODS

YCS951	COMPUTER NETWORKS	L	T	P	C
		3	0	0	3

UNIT I   DATA COMMUNICATIONS   9

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   9

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   9

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   9

Domain Name Space (DNS) – SMTP – FTP – HTTP - WWW – Security – Cryptography.

TOTAL : 45 PERIODS

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.

YCS952	ARTIFICIAL INTELLIGENCE	L	T	P	C
		3	0	0	3

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, "Antificial Intelligence", 2nd Edition, Tata McGraw-Hill, 2003.

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 PERIODS

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

YCS954	MULTIMEDIA SYSTEMS	L	T	P	C
		3	0	0	3

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 TOOL   9
ultimedia 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.
2. (Unit I, II, IV and V), 2008.
3. Multimedia Systems, John F.Koegel Buford, Pearson edition, 2003. (unit III).
4. Ranjan Parekh, Principles of Multimedia, TMH, 2006.
5. Multimedia: Computing, Communication and applications, Ralf Steinmetz and Klara Nahrstedt, Pearson Edition, 2001.

YCS956	**GRAPHICS AND MULTIMEDIA LAB**	**L**	**T**	**P**	**C**
		0	**0**	**3**	**2**

1. To implement Bresenham's algorithms for line, circle and ellipse drawing
2. To perform 2D Transformations such as translation, rotation, scaling, reflection and sharing.
3. To implement Cohen-Sutherland 2D clipping and window-viewport mapping
4. To perform 3D Transformations such as translation, rotation and scaling.
5. To visualize projections of 3D images.
6. To convert between color models.
7. To implement text compression algorithm
8. To implement image compression algorithm
9. To perform animation using any Animation software
10. To perform basic operations on image using any image editing software
TOTAL: 45PERIODS

TOTAL : 45 PERIODS

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

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

YCS961 **PRINCIPLES OF MANAGEMENT** L T P C

3 0 0 3

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 Koontz & 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

YCS962   **INFORMATION SECURITY**   **L   T   P   C**
                                                                   3   0   0   3

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   12

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.

YCS965   **PROJECT WORK -1**   **L T P C**
                                                                      0 0 12 6

The project will be one semester duration. The student will be sent to different organizations involved in science communication activities as per interest and specialization of students, mostly located in the place of the study. They will have to carry out a project work related to the area of interest and submit a research project report at the end of the semester . The students shall defend their dissertation in front of experts during viva-voce examinations.

YCS001   **BUSINESS DATA PROCESSING**   **L   T   P   C**
                                                                              3   0   0   3

UNIT I   INTRODUCTION   9
Organizational behaviour- Foundations of Individual behavior-Perception and Individual 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 structuring 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.

YCS002   **MANAGEMENT INFORMATION SYSTEMS**   **L   T   P   C**
                                                                        3   0   0   3

UNIT I   INFORMATION SYSTEM AND ORGANIZATION   9

Matching the Information System Plan to the Organizational Strategic Plan – Identifying Key Organizational Objective and Processes and Developing an Information System Development – User role in Systems Development Process – Maintainability and Recoverability in System Design.

UNIT II   REPRESENTATION AND ANALYSIS OF SYSTEM STRUCTURE   9
Models for Representing Systems: Mathematical, Graphical and Hierarchical (Organization Chart, Tree Diagram) – Information Flow – Process Flow – Methods and Heuristics – Decomposition and Aggregation – Information Architecture – Application of System Representation to Case Studies.

UNIT III   SYSTEMS, INFORMATION AND DECISION THEORY   9
Information Theory – Information Content and Redundancy – Classification and Compression – Summarizing and Filtering – Inferences and Uncertainty – Identifying Information needed to Support Decision Making – Human Factors – Problem characteristics and Information System Capabilities in Decision Making.

UNIT IV   INFORMATION SYSTEM APPLICATION   9
Transaction Processing Applications – Basic Accounting Application – Applications for Budgeting and Planning – Other use of Information Technology: Automation – Word Processing – Electronic Mail – Evaluation Remote Conferencing and Graphics – System and Selection – Cost Benefit – Centralized versus Decentralized Allocation Mechanism.

UNIT V   DEVELOPMENT AND MAINTENANCE OF INFORMATION SYSTEM   9
Systems analysis and design – System development life cycle – Limitation – End User Development – Managing End Users – off– the shelf software packages – Outsourcing – Comparison of different methodologies.

TOTAL :45 PERIODS

TEXT BOOKS:

1. Laudon K.C, Laudon J.P, Brabston M.E, "Management Information Systems - Managing the digital firm", Pearon Education, 2004.
2. Turban E.F, Potter R.E, "Introduction to Information Technology"; Wiley,   2004.
3. Jeffrey A.Hoffer, Joey F.George, Joseph S. Valachich, "Modern Systems Analysis and Design", Third Edition, Prentice Hall, 200

YCS003	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) – discriminatio

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

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 PERIODS

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.

YCS005	**CLIENT SERVER COMPUTING**	**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 2 tier, Intergalactic client server, client server for different models, building blocks

UNIT II CLIENT/SERVER OPERATION 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 Aproach", 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

YCS006	ADVANCED COMMUNICATION TECHNOLOGY	L	T	P	C
		3	0	0	3

UNIT I   DATA COMMUNICATION   **9**
Introduction – Data Forms – Transmission Modes – Simplex, Half Duplex – Full Duplex – Point to Point Network – Star Network – Ring Network – Bus Network – Telephone Lines – Dial-up Lines – Dedicated Lines – Data Communication System – Asynchronous and Synchronous Transmission – USART's and ACIA's – RS 232 interconnect cable –Modems – Protocols

UNIT II   DATA COMMUNICATION NETWORKS   **9**
Introduction – Data link Protocol function – character and bit oriented data link protocols – Asynchronous data link protocols –synchronous data link protocols – synchronous data link control – high level data link control – public switched data networks - CCITT X.25 user to network interface protocol –ISTN – ATM – LAN – Ethernet.

UNIT III   SATELLITE CONMUNICATION   **9**
Introduction – Satellite Orbit – Satellite Position –Up link – Down link – Cross link – Assignable Satellite Frequencies. Inside Satellite: Transponder – Antenna System – Power Package and Station Keeping – Forms of Modulation – Free path space losses – Ground Station – Aligning the satellite dish

UNIT IV   CELLULAR COMMUNICATION SYSTEM   **9**
Introduction Cellular Mobile System – Basic Cellular System – Operational Cellular System – Maximum number of Calls per cell – Maximum number of Frequency channels concept of frequency channel cell splitting – permanent splitting – real time splitting – Frequency Management – Channel Assignment

UNIT V   OPTICAL COMMUNICATION   **9**
Introduction to Optical fibers – Optical fiber structure – Numerical aperture – Propagation of light rays through it – Application of Optical Fiber (Video link. Satellite link, Computer link, Communication antenna Television link)

REFERENCE BOOKS:

1. Robert J.Shoernbeck, "Electronic communications modulation and transmission", PHI, 2005.
2. Wayne Tomasi, "Electronic Communication Systems" V ed, Pearson Education, 2006.
3. William C. Y. Lee, "Mobile Communication Systems", McGraw Hill Pubications, 1995.
4. Subir Kumar Sarkar "Optical Fiber Communication systems", S.Chand and Company, 1997.

YCS007	SOFTWARE TESTING	L	T	P	C
		3	0	0	3

UNIT I   INTRODUCTION   8
Testing as an Engineering Activity – Testing as a Process – testing axioms - Basic Definitions – Software Testing Principles – The Tester's Role in a Software Development Organization – Origins of Defects – cost of defects - Defect Classes – The Defect Repository and Test Design – Defect Examples – Developer/Tester Support for Developing a Defect Repository – Defect Prevention Strategies

UNIT II   TEST CASE DESIGN   11
Test Case Design Strategies – Using Black Box Approach to Test Case Design - Random Testing – Requirements based testing – Boundary Value Analysis – Decision tables - Equivalence Class Partitioning - State-based testing – Cause-effect graphing – Error guessing - Compatibility testing – User documentation testing – Domain testing
Using White Box Approach to Test design – Test Adequacy Criteria – static testing vs. structural testing – code functional testing - Coverage and Control Flow Graphs – Covering Code Logic – Paths – Their Role in White–box Based Test Design – code complexity testing – Evaluating Test Adequacy Criteria.

UNIT III   LEVELS OF TESTING   9
The Need for Levels of Testing – Unit Test – Unit Test Planning –Designing the Unit Tests - The Test Harness – Running the Unit tests and Recording results – Integration tests – Designing Integration Tests – Integration Test Planning – Scenario testing – Defect bash elimination
System Testing – Acceptance testing – Performance testing - Regression Testing – Internationalization testing – Ad-hoc testing - Alpha , Beta Tests – testing OO systems – Usability and Accessibility testing – Configuration testing - Compatibility testing – Testing the documentation – Website testing

UNIT IV   TEST MANAGEMENT   9
People and organizational issues in testing – organization structures for testing teams – testing services - Test Planning – Test Plan Components – Test Plan Attachments – Locating Test Items – test management – test process - Reporting Test Results – The role of three groups in Test Planning and Policy Development – Introducing the test specialist – Skills needed by a test specialist – Building a Testing Group.

UNIT V   TEST AUTOMATION   8
Software test automation – skills needed for automation – scope of automation – design and

architecture for automation – requirements for a test tool – challenges in automation - Test metrics and measurements –project, progress and productivity metrics

TOTAL: 45 PERIODS

TEXT BOOKS:
1. Srinivasan Desikan and Gopalaswamy Ramesh, " Software Testing – Principles and Practices",   Pearson education, 2006.
2. Ilene Burnstein, "Practical Software Testing", Springer International Edition, 2003.

REFERENCES:
1. ron patton, " software Testing", Second Edition, Sams Publishing, Pearson education, 2007
2. Renu Rajani, Pradeep Oak, "Software Testing – Effective Methods, Tools and Techniques", Tata   McGraw Hill, 2004.
3. Edward Kit, "Software Testing in the Real World – Improving the Process", Pearson Education, 1995.
4. Boris Beizer, "Software Testing Techniques" – 2nd Edition, Van Nostrand Reinhold, New York, 1990.
5. Aditya P. Mathur, "Foundations of Software Testing – Fundamental algorithms and techniques", Dorling Kindersley (India) Pvt. Ltd., Pearson Education, 2008

YCS008	IMAGE PROCESSING	L	T	P	C
		3	0	0	3

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.
5. Chanda Dutta Magundar – Digital Image Processing and Applications, Prentice Hall of India, 2000

YCS009	VISUAL PROGRAMMING	L	T	P	C
		3	0	0	3

UNIT I   WINDOWS PROGRAMMING   9

Windows environment – a simple windows program – windows and messages - creating the window – displaying the window – message loop – the window procedure – message processing – text output – painting and repainting – introduction to GDI – device context – basis drawing

UNIT II   VISUAL C++ PROGRAMMIG – INTRODUCTION   9

Application Framework – MFC library – Visual C++ Components – Event Handling – Mapping models – colors – fonts – modal and modeless dialog – windows common controls.

UNIT III   THE DOCUMENT AND VIEW ARCHITECTURE   9

Menus – Keyboard accelerators – rich edit control – toolbars – status bars – creating DLLs – dialog based applications

UNIT IV   ACTIVEX AND OBJECT LINKING AND EMBEDDING (OLE)   9

ActiveX controls Vs. Ordinary Windows Controls – Installing ActiveX Controls- Calendar Control – ActiveX control container programming –create ActiveX control at runtime – OLE drag and drop – OLE embedded component and containers – sample applications

UNIT V   DATABASE CONNECTIVITY   9

Database Management with Microsoft ODBC – Structured Query Language – MFC ODBC classes – sample database applications – filter and sort strings – DAO concepts – displaying database records in scrolling view

TOTAL: 45 PERIODS

REFERENCE TEXT BOOKS
1. Charles Petzold, "Windows Programming", Microsoft press, 1996 (Unit I – Chapter 1-9)
2. David J.Kruglinski, George Shepherd and Scot Wingo, "Programming Visual C++", Microsoft press, 1999 (Unit II –V)
3. Steve Holtzner, "Visual C++ 6 Programming", Willey DreamtechIndia Pvt., Ltd., 2003.

YCA961	CRYPTOGRAPHY AND NETWORK SECURITY	L	T	P	C
		3	0	0	3

UNIT I   INTRODUCTION   10
OSI Security Architecture - Classical Encryption techniques – Cipher Principles – Data Encryption Standard – Block Cipher Design Principles and Modes of Operation - Evaluation criteria for AES – AES Cipher – Triple DES – Placement of Encryption Function – Traffic Confidentiality

UNIT II   PUBLIC KEY CRYPTOGRAPHY   10
Key Management - Diffie-Hellman key Exchange – Elliptic Curve Architecture and Cryptography - Introduction to Number Theory – Confidentiality using Symmetric Encryption – Public Key Cryptography and RSA.

UNIT III   AUTHENTICATION AND HASH FUNCTION   9
Authentication requirements – Authentication functions – Message Authentication Codes – Hash Functions – Security of Hash Functions and MACs – MD5 message Digest algorithm - Secure Hash Algorithm – RIPEMD – HMAC Digital Signatures – Authentication Protocols – Digital Signature Standard

UNIT IV   NETWORK SECURITY   8
Authentication Applications: Kerberos – X.509 Authentication Service – Electronic Mail Security – PGP – S/MIME - IP Security – Web Security.

UNIT V   SYSTEM LEVEL SECURITY   8
 Intrusion detection – password management – Viruses and related Threats – Virus Counter measures – Firewall Design Principles – Trusted Systems.

TOTAL : 45 PERIODS

REFERENCE BOOKS
1. William Stallings, "Cryptography And Network Security – Principles and Practices", Prentice Hall of India, Third Edition, 2003.
2. Bruce Schneier, "Applied Cryptography", John Wiley & Sons Inc, 2001.
3. Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, 2003.
4. Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", Third Edition, Pearson Education, 2003.

YCS011	**DECISION SUPPORT SYSTEMS**	**L**	**T**	**P**	**C**
		3	0	0	3

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
**   SUPPORT SYSTEMS   9**

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

YCS012   **MOBILE COMPUTING**   **L   T   P   C**
                                                                   3   0   0   3

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   11
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 PERIODS

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.

YCS013   **WIRELESS TECHNOLOGY**   **L   T   P   C**
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UNIT I   WIRELESS MEDIUM   9

Air Interface Design – Radio Propagation mechanism – Pathloss modeling and Signal Coverage – Effect of Multipath and Doppler – Channel Measurement and Modeling – Simulation of Ration Channel.

UNIT II   WIRELESS MEDIUM ACCESS   9

Fixed Assignment Access for Voice Networks – Random Access for Data Networks – Integration of Voice and Data Traffic.

UNIT III   WIRELESS NETWORK OPERATION   9

Fixed Assignment Access for Voice Networks – Random Access for Data Networks – Integration of Voice and Data Traffic

UNIT IV   WIRELESS WAN   9

GSM and TDMA Technology – Mobile Environment – Communication in the Infrastructure – CDMA Technology – IS95 – IMT2000 – Mobile Data Networks – CDPD Networks – GPRS – Mobile Application Protocol

UNIT V   WIRELESS LANS AND HIPERLANS   9

Introduction to wireless LANs – IEEE 802.11 WPAN IEEE 802.15 – Wireless Home Networking - Concepts of Bluetooth Technology – Wireless Geolocation.

                                             TOTAL : 45 PERIODS

REFERENCES :
1. Kaveth Pahlavan, K . Prasanth Krishnamurthy, « Principles of Wireless Networks » Pearson Education Asia, 1st edition, New Delhi, 2002
2. William Stallings, «Wireless Communications and Networks », Prentice Hall, 2nd Edition, New Delhi, 2002.
3. Neeli Prasad, Anand Prasad, « WLAN System & Wireless IP for Next Generation Communications », Artech House, 1st Edition, USA, 2002
4. Assuncion Santamaria, Franciso Lopez – Hernandez, « Wireless LAN Standards and Applications », Artech House, 1st Edition, USA, 2001

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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   10

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   8

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 PERIODS

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

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 PERIODS

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.

YCS016	DISTRIBUTED OPERATING SYSTEMS	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 BOOKS:
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

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.

TOTAL : 45PERIODS

REFERENCE BOOKS:

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