ALAGAPPA UNIVERSITY, KARAIKUDI.
NEW SYLLABUS UNDER CBCS PATTERN (w.e.f.2017-18)

M.Sc. COMPUTER SCIENCE & INFORMATION TECHNOLOGY – PROGRAMME STRUCTURE

Sem.	Course		Cr.	Hrs./ Week	Max. Marks		
	Course code	Title of the Course			Int.	Ext.	Total
I	7MC11C1	Core – I – Principles of Information Technology	4	5	25	75	100
	7MC11C2	Core – II – Programming in C	4	5	25	75	100
	7MC11C3	Core – III – Data structure and Algorithms	4	5	25	75	100
	7MC11C4	Core – IV-Computer Fundamentals and Architecture	4	5	25	75	100
	7MC11P1	Core – V – Programming in C Lab (Using Data Structure and Algorithm)	4	5	40	60	100
		Elective – I	4	5	25	75	100
		Total	24	30	--	--	600
II	7MC12C1	Core – VI – Database Technology	4	5	25	75	100
	7MC12C2	Core – VII – Java Programming	4	5	25	75	100
	7MC12C3	Core – VIII – Computer Networks	4	5	25	75	100
	7MC12P1	Core – IX – Java Programming Lab	4	5	40	60	100
		Elective – II	4	5	25	75	100
		Elective – III	4	5	25	75	100
		Total	24	30	--	--	600
III	7MC13C1	Core – X – Principles of Compiler Design	4	5	25	75	100
	7MC13C2	Core – XI – Software Engineering	4	5	25	75	100
	7MC13C3	Core – XII – Visual Programming	4	5	25	75	100
	7MC13P1	Core – XIII – Visual Programming lab	4	5	40	60	100
		Elective – IV	4	5	25	75	100
		Elective – V	4	5	25	75	100
		Total	24	30	--	--	600
IV	7MC14PR	Core – XIV – Project Work	18	30	50	150	200
		Total	18	30	--	--	200
		Grand Total	90	120	--	--	2000

Elective – I

1. PC Maintenance and troubleshooting	–	7MC11E1
2. Operating System	–	7MC11E2
3. Microprocessor and Assembly Language Programming	–	7MC11E3

Elective – II

1. Computer Oriented Numerical Methods	–	7MC12E1
2. Resource Management Technique	–	7MC12E2
3. Theory of Computation	–	7MC12E3

Elective – III

1. Open Source Technology	–	7MC12E4
2. Fundamentals of Grid and Cloud Computing	–	7MC12E5
3. Computer Graphics	–	7MC12E6

Elective – IV

1. Multimedia and its Applications	–	7MC13E1
2. Digital Image processing	–	7MC13E2
3. Web Technology	–	7MC13E3

Elective – V

1. Data Mining and Warehousing	–	7MC13E4
2. Cyber Security	–	7MC13E5
3. Mobile Computing	–	7MC13E6

M.Sc. COMPUTER SCIENCE & INFORMATION TECHNOLOGY

I YEAR – I SEMESTER
COURSE CODE: 7MC11C1

CORE COURSE- 1 – PRINCIPLES OF INFORMATION TECHNOLOGY

Unit I

An overview of the revolution computers and Communications: From the analog to the digital age: The "New Story" of computers and communications – The six elements of a computer & communication system – Communications: Development in Computer Technology, Developments in Communication Technology – Computer and Communication technology combined: Connectivity and Interactivity – The "All Purpose Machine": The information Appliance that will change your future – The Ethics of Information Technology.

Unit II

Application Software: Tools for thinking and working – Ethics and intellectual property rights: The four types of Application software – The user interface and other basic features – Word processing – Spreadsheets – Database software – Presentation graphics software – communications software – desktop accessories and personal information managers – integrated software and suites – Groupware internet web browsers – Specialized software.

Unit III

Communications: Starting along the information Highway: The practical uses of communication and connectivity – Telephone related communication services – Video / voice communication. Video conferencing and picture phones – Online information services – The Internet – Shared resources: Workgroup computing – Electronic Data interchange and intranets: Telecommuting and virtual offices – Using a microcomputer to communicate: Analog and Digital signal – Modems and data communication software – ISBN lines – Cable Modems – Communication channels – Communication Networks – Local Networks – Factors affecting data transmission – Cyberethics – Netiquette – Controversial and censorship and privacy issues.

Unit IV

Storage and Databases: Foundations for interactivity, multimedia and Knowledge storage capacity – compression and decompression – Criteria for rating secondary storage devices – Diskettes – Hard Disks – Optical Disks – Magnetic Tapes – Organizing data in secondary storage: Databases, Data Storage – Hierarchy and the concept of the key field – File management – Basic concepts – File management systems – Data Management systems – Types of database organization – Features of DBMS – The Ethics of using Database – Concerns about accuracy and privacy.

Unit V

Information System and Software Development: Management Information Systems – The six phases of system analysis design – The five steps in programming – Five generations of programming languages – Programming languages – Object oriented and visual programming– Internet programming – HTML, XML, Java and ActiveX – The information super Highway – Security Issues.

Text Book:

1. Satcey C. Sawyer, Brain K. Williams Sarah E Hutchinson using Information Technology – Brief version A practical introduction to computer and communications– 9th edition McGraw Hill.(2010)

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I YEAR – I SEMESTER
COURSE CODE: 7MC11C2

CORE COURSE – 11 – PROGRAMMING IN C

Unit I

    Introduction to computers –Types of programming languages – Introduction to C – Structure of a C program – Constants, Variables – data types – operators and expressions – Input and Output operations – Decision making – branching – looping Statements.

Unit II

    Arrays: Definition of Array, Characteristic of Array, – Array initialization, One dimensional array, Two dimensional array, Multidimensional arrays, – **character strings**: Declaring and initializing string variables – reading strings from terminal – writing strings to screen – arithmetic operations on characters – string handling functions

Unit III

    User defined functions: Introduction – need for user defined functions – the form of C functions – return values and their types – calling a function – categories of functions – nesting of functions – recursion – functions with arrays – the scope and lifetime of variables.

    Structures and Unions: Structure definition – giving values to members – structure initialization – arrays of structures – arrays within structures – structures within structures – structures and functions – unions .

Unit IV

    Pointers: Introduction – understanding pointers – accessing the address of a variable – declaring and initializing pointers – accessing a variable through it's pointer – pointer expressions – pointer increments – pointers and arrays – pointers and functions – pointers and structures.

Unit V

    File Handling: defining and opening a file – closing a file – I/O operations on files – error handling during I/O operations – random access to files – command line arguments.

    Preprocessor: Introduction – Macro substitution, file inclusion and compiler control directives.

    Dynamic memory Allocation.

Text Book:

    1. Programming in ANSI C 6th Edition– E.Balagurusamy, Tata McGrawHill

    Publishing Company Ltd, NewDelhi

Books for Reference:

    1. Programming with C – K.R.Venugopal, Sudeep.R Prasad Tata McGrawHill

    Publishing Company Ltd, NewDelhi.

2.	Theory and problems of programming with C – Byron S.Gottfried, Schaum's outline series Tata McGrawHill Publishing Company Ltd, NewDelhi

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I YEAR – I SEMESTER
COURSE CODE: 7MC11C3

CORE COURSE – III – DATA STRUCTURE AND ALGORITHMS

Unit I

Introduction to Data Structure – Linear Data Structure, List, Implementation of a list, Traversal of a list, Searching and retrieving an element. Predecessor and successor, Insertion, Deletion, Sorting, Merging lists

Unit II

Representation of Stack, Stack related terms, Operation on a stack, Implementation of a stack, Infix to Postfix Conversion, Recursion, Queues, Various Positions of Queue, Representation of Queues, Circular Queue, Single linked list, Doubly Linked List, Applications.

Unit III

Non-linear Data Structure – Trees, Binary Trees, and Types of Binary trees, Binary Tree Representation, Traversing Binary Trees, Binary Search tree, Insertion and deletion operations, Hashing Techniques, Traversal – Shortest Path, Dijkstra's Algorithm

Unit IV

Searching and Sorting – Introduction, Divide and Conquer, Searching, Linear Search, Binary Search, Sorting, Insertion sort, Selection sort, Bubble sort, Quick sort, Tree sort, Merge sort.

Unit V

Introduction: Algorithm, Psuedo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation.

Text Books:

1. Ellis Horowitz and Sartaj Sahini, Fundamentals of Data structures in C , Second edition, Univeristies press, 2007
2. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni and Rajasekharam, Galgotia publications pvt. Ltd.

Books for Reference:

1. R. Krishnamoorthy and G. Indirani Kumaravel , " Data Structures using C", Tata
   McGraw–Hill Publishing Company Limited, 2008.
2.
   Data Structures, Seymour Lipschutz, G.A.Vijayalakshmi Pai, Edition 2006,
   Schaum's Outlines, Tata Mc-Graw Hill Private Limited
3.
   Fundamentals of Data structures in C, Second edition, Ellis Horowitz and Sartaj
   Sahini, Univeristies press, 2007.
4.
   Programming and Data Structure, Pearson Edition 2004, Ashok N Kamthane.

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CORE COURSE - IV – COMPUTER FUNDAMENTALS AND ARCHITECTURE

Unit I

Number Systems : Binary, Octal, Decimal and Hexadecimal number systems – Conversion from one base to another base – Use of complements – binary arithmetic – Numeric and Character codes.

Unit II

Boolean algebra and Combinational Circuits: Fundamental concepts of Boolean Algebra – De Morgan's theorems – Simplification of expressions – Sum of products and products of sums – Karnaugh map simplification – two level implementation of Combinational Circuits. Combinational Circuits: Decoders – Encoders – Multiplexers – Demultiplexer.

Unit III

Sequential Circuits: Flip flops – Clocks – Gated Flip flops – Master Slave Flip Flops – Registers – Shift Registers – Binary Counters.
Construction of ALU – Half Adder – Full Adder –Half Subtractor – Full Subtractor – Arithmetic operations using Parallel binary Adders.

Unit IV

CPU organization: Processor Bus organization – ALU – Stack organization – Instruction formats – Addressing modes – Data transfer and manipulation – Program control.
Register Transfer Language: Inter Register Transfer – Arithmetic – Logical shift micro operations – Control functions – Basic computer organization – Instruction codes – instructions – Timing control – Execution of instruction – Input/ output interrupt.

Unit V

Peripheral Devices: I/O interface – Asynchronous Data transfer – Synchronous data transfer– Priority interrupts – IOP – Data Communication – Hierarchy, Associative – Virtual – Cache Memory

Text Books:
1. Digital Computer Fundamentals, 6ᵗʰ Edition, Thomas C. Bartee, Tata McGraw
    Hill, 2008.
2. Digital Logic and Computer Design, M. Morris Mano, Pearson Education, 2008.
3. Computer System Architecture, Morris Mano, Prentice Hall of India, 3ʳᵈ Edition
    2002

Books for Reference:
1. Digital Computer Electronics, 3ʳᵈ Edition, Albert Paul Malvino and Jerald A. Brown, Tata McGraw Hill, 2008.
2. Computer Organization, 5ᵗʰ Edition, V.C.Hamacher et al, Tata Mcgraw Hill.
3. William Stallings, "Computer Organization and Architecture" Addison

Wesley publications 5th edition 2001

4. *John D Carpinelli, "Computer Systems Organization and Architecture" Addison Wesley Publication 1st Edition 2001.*

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CORE COURSE-V–PROGRAMMING IN C LAB
(Using Data structure and Algorithm)

1. Write a program to generate prime numbers within a range

2. Write a program to find whether the given number is palindrome or not

3. Write a program to count the number of positive, negative and zero

4. Write a program to check whether the element is present in the given list or not

5. Write a program to find the factorial of a given number using function declaration

6. Write a program to sort names in alphabetical order

7. Write a program to arrange the numbers in ascending order

8. Write a program to multiply two matrices and print the result in transpose form

9. Perform String operations

10. Write a program to count the vowels in the given string

11. Preparation of student mark list using structure

12. Write a program to sort numbers using pointers

13. Preparation of Employee salary bill using file processing

14. Preparing Students mark list using file

15. Program to copy the contents of one file into another file

16. Program for binary search

17. Implement selection sort

18. Implement bubble sort

19. Implementation of Stack using linked list.

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ELECTIVE COURSE – 1 (A) – PC MAINTENANCE AND TROUBLESHOOTING

Unit I

PC Background: Personal Computing History – IBM Personal Computer – Types of Systems – Documentation Systems -Tear Down and Inspection: using proper tools – Hand tools – Soldering and Desoldering tools – using proper test Equipment – Disassembly procedures.

Unit II

Primary System Components: Motherboard – Bus Slots and I/O Cards – Memory – Power Supply – Input Devices – VDU and Specificatons- Audio Hardware – Harddisk Drives and Controllers – CDROM and Storage Drives.

Unit III

System Assembly and Maintenance: Upgrading goals – Upgradation by increasing system memory – Adding Motherboard Memory – Upgrading by ROM Bios – Upgrading Disk Drives – Speeding up a System – General System Cleaning

Unit IV

Software and Hardware Diagnostic Tools: Diagnostic Software – Power and self Test – IBM Diagnostic – General purpose Diagnostics programs – Disk Diagnostics – Data recovery utilities.

Unit V

OS Software and Troubleshooting: OS Basics – ROM Bios – Boot Process – File Management – DOS File Space Allocation. Basic Troubleshooting: Using Logs – Using Single step Boot – Using Clean Boot – using a Minimal Configuration – using safe mode and overcoming Hardware conflicts – using a Boot/ Recovery disk – using Switches to start windows.

Text Book:

1. Scott Mueller, Upgrading and repairing PCs, EEE Edition, Prentice Hall of India Private Ltd New Delhi-1995.

Books for Reference:

1. Jim Boyce, PUpgrading PCs Illustrated ,Prentice Hall of India-1998,Newdelhi
2. Ron Gilster, PC upgrade and Repair, D Dreamtech press,19-A Ansari Road, Daryaganj,Newdelhi-2001.

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I YEAR – I SEMESTER
COURSE CODE: 7MC11E2

ELECTIVE COURSE – I (B) – OPERATING SYSTEM

Unit I
Overview: Introduction operating system software – Machine Hardware – Types of operating system – Brief History of Operating systems Development.
Memory Management, Early Systems: Single-User Contiguous Scheme – Fixed Partitions – Dynamic Partitions – Best-Fit versus First-Fit Allocation – Deallocation – Relocatable Dynamic Partitions.
Memory Management, Recent Systems: Paged Memory Allocation – Demand Paging – Page Replacement – Policies and Concepts –Segmented Memory Allocation – Segmented/Demand Paged Memory Allocation – Virtual Memory

Unit II
Processor Management: Job Scheduling Versus Process Scheduling – Processor Scheduler – Process Scheduling Policies – Process Scheduling Algorithms – Cache Memory – A Word about Interrupts
Process Management: Deadlock – Seven Cases of deadlock – Conditions for deadlock – Modeling deadlock – Strategies for Handling deadlock – Starvation

Unit III
Concurrent Processes: What Is Parallel Processing? – Typical Multiprocessing Configurations – Process Synchronization Software – Process Cooperation – Concurrent Programming
Device Management: System Devices – Sequential Access Store Media – Direct Access Storage Devices – Components of the I/O Subsystem – Communication among Devices – Management of I/O Requests

Unit IV
File Management: The File Manager – Interacting with the File Manager – File Organization– Physical Storage Allocation – Data Compression – Access Methods – Levels in a File Management System – Access Control Verification Module – Exercises for self study.
Management of Network Functions: History – Comparison of Network and Distributed Operating System – DO/S Development – NOS Development

Unit V
Unix Operating System: History – Design Goals – Memory Management – Processor Management – Device Management – File Management – User Interface

Text Book:
1. Understanding Operating Systems, Ida M.Flynn / Ann Mclver McHoes, Fourth Edition, Thomson Brooks/Cole 2009

Books for Reference:
1. Operating systems Internal and Design Principles – Fifth Edition,William Stallings, PHI
2. Operating systems – Second edition, Achyut S Godbole, TMH

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I YEAR – I SEMESTER
COURSE CODE: 7MC11E3

ELECTIVE COURSE – 1 (C) – MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

Unit I   Intel 8086 / 8088 Internal Architecture
Architecture of 8086 – Bus interface unit: Segment Registers, Instruction Pointer, Stack Segment Register and Stack Pointer Register, Pointer and Index Registers – Execution unit: control Circuitry, Instruction Decoder,and ALU,Flag Register,General Purpose registers – Instruction set – Addressing Modes: Data Addressing Modes,Program memory Addressing Modes,Stack memory Addressing modes – Minimum and maximum modes of operations.

Unit II   Assembler 86
Reserved word – Program Format – Segments and ENDS directives, Naming data and Address-EQU,DB,DW and DD directives, declaratives – Macros: Defining and calling a Macro without Parameters, passing parameter to macros – Simple assembly language Example programs.

Unit III   Memory Sections
General Features of memory interface, Pentium Interface, Dynamic RAM, SDRAM – Simple memory sections – Memory sections for intel 86: Segments, Segment descriptors, Using the Segment Selectors, Paging.

Unit IV   I/O Sections
Intel 8086 I/O Structure – Programmable peripheral interface 8255: Basic description of 8255, Programming the 8255, Operational modes of 8255, LCD display interfaced to 8255 – Keyboard / display controller 8279: Basic description of 8279,Interfacing the 8279 to the microprocessor, Keyboard Interface, Six Digit Display Interface –8254 software- Programmable timer / counter: system connections, Initializing 8254 PPD, Counter modes and Applications..

Unit V   Interrupts 8086
Interrupt types – Programmable priority interrupt controller 8259: Block diagram of 8259 architecture, Programming the 8259 – DMA Data transfer in 8086 – Circuit connections of DMA controller 8257 – Introduction to intel 80486, Pentium: Introduction to Pentium Processor, Pentium registers, memory management and new instructions. Pentium pro: Introduction to Pentium pro processor, special Pentium pro features, Pentium II architecture.

Text Book:
1. Douglas V Hall "Microprocessor and Interfacing, Programming & Hardware", Tata McGraw Hill Company Ltd.2008

Books for Reference:
1. Yu Chuglui & Glenn. A., Gibson, "Microprocessor Systems, the 8086/ 8088 Family", Prentice Hall 2001
2. Brey BB, "Intel Microprocessors, 8086, 8088, 80186, 80286, 80386, 80486, Pentium & Pentium Pro Architecture Programming & Interfacing", Eigth Edition Prentice Hall of India 2009.

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I YEAR – II SEMESTER
COURSE CODE: 7MC12C1

CORE COURSE – VI – DATABASE TECHNOLOGY

Unit I

Introduction to DBMS: Purpose of database system – Database system Terminologies – Database characteristics – Data Models – Types of Data Models – Components of DBMS.

Logical Database Design: Relational Algebra – Relational Calculus – Entity Relationship Model – Extended ER Logical 1NF to 5NF – Domain Key Normal form – Denormalization.

Unit II

Introduction to SQL: SQL as standard – Data types – Database objects – DDL – DML – TCL

Query Optimization: Query Processing and optimization – Heuristics and Cost Estimates in Query Optimization.

Unit III

Transaction Processing: Introduction – Properties of transaction – Serializability – Concurrency control – Locking Mechanisms – Two Phase Commit Protocol – Deadlock.

Unit IV

Introduction to Distributed Databases: Distributed databases – Multidimensional and Parallel databases – Spatial and Multimedia databases – Mobile and Web databases.

Unit V

Data Warehousing and Data Marts: Data in data warehouse – Types of Data Marts – Data Mining

Database Security: Security Threats – Defense Mechanisms – Security Specification SQL – Statistical Database Security.

Text Books:
1. Ramakrishnan R and Gehrke J, "Database Management Systems" McGraw Hill Third Edition New Delhi 2003.
2. Ramez Elmasri and Shamkant B Navathe, "Fundamentals of databse Systems" Pearson Education India, Second Reprint New Delhi 2004.

Books for Reference:
1. Abraham Silberschatz, Henry K Forth, Sudarshan S, " Database System Concepts" Tata McGrawHill Fourth Edition NewDelhi 1998
2. Atul Kahate, "Introduction to Database Management Systems" Pearson Education, New Delhi 2004.
3. Alexis Leon, Mathews Leon "Database Management Systems" Vikas Publishing House Private Limited, New Delhi 2003.

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I YEAR – II SEMESTER
COURSE CODE: 7MC12C2

CORE COURSE – VII – JAVA PROGRAMMING

Unit I

     Java Evolution: Java History – Java Features – Java and Internet – World Wide Web – Web Browsers – H/W and S/W requirements – Java Support Systems – Java Environment – Java Language : Overview – – Simple Java Program – Comments – Java Program Structure – Tokens – Java Statements – Implementing a Java Program – JVM – Command Line Arguments - Constants – Variables – Data Types – Type Casting.

Unit II

     Operators and Expressions : Arithmetic Operators – Relational, Logical, Assignment, Increment and Decrement, Conditional, Bitwise, Special Operators – Arithmetic expressions, Evaluation of expression – Precedence of Arithmetic Operators – Type Conversions – Operator Precedence and associativity – Mathematical Functions - Decision Making and Branching statements : If – if.....else – Nesting – if..Else – else if – switch statement – Decision Making and Looping statements : While – do – for – jump in loops – labelled loops.

Unit III

     Classes, Objects and Methods : Defining a class – Adding variables, methods – Creating objects – Accessing Class Members– Constructors – Methods overloading – static members – Nesting of Methods – Inheritance – Overriding methods – final Variables and methods – Final classes – finalizer methods – Abstract methods and classes – visibility control - Arrays, Strings and Vectors : Arrays – One Dimensional Arrays – Creating an array – Two Dimensional Arrays – Strings – Vectors – Wrapper Classes - Interfaces: Multiple Inheritance – Defining interfaces – Extending interfaces – implementing interfaces – Accessing interface variables.

Unit IV

     Applet Programming: How applets differ from Applications – preparing to write applets – Building Applet Code – Applet life cycle – creating an Executable Applet – Designing a Web Page – Applet Tag – Adding Applet to HTML file – Running the Applet – Passing parameters to Applets – Displaying Numerical values – Getting input from the user

Unit V

     Introduction to J2EE – J2EE Overview – JDBC : <u>Features of JDBC</u> – <u>JDBC Connectivity Model</u> – <u>Database Programming</u> – <u>Connecting to the Database</u> – <u>Creating a SQL Query</u> – <u>Getting the Results</u> – Updating database data - Servlet – Introduction to servlet – Servlet life cycle – Initializing a Servlet – Accessing Database – JSP : Basic JSP – Architecture – JSP Tags and Expressions – JSP with Database – RMI : Overview – RMI architecture – Example demonstrating RMI – EJB : Overview – Types of enterprise beans – Advantages of enterprise beans – The Life Cycle of Enterprise Beans – Working with Session Beans

Text Books:

1. E. Balagurusamy, "Programming with JAVA", TATA McGraw-Hill Publishing Company Limited, New Delhi, Second Edition 2006.
2. Robert McGovern and Stuart Charlton, <u>CodeNotes for J2EE: EJB, JDBC, JSP, and Servlets</u>, Random House, 2002

Books for Reference:

1. Herbert Schildt, "Java 2 – The Complete Reference", TATA Mc Graw Hill Publishing Company Limited, New Delhi, Fifth Edition, 2006.
2. H.M. Deitel, P.J.Deitel, "Java – How to Program", Pearson Education Pvt. Ltd, Delhi, Sixth Edition 2005,
3. Cedric Beust et al., <u>Professional Java Server Programming, J2EE 1.3 Edition</u>, Wrox Press, 2001

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CORE COURSE – VIII – COMPUTER NETWORKS

Unit I

Introduction: The use of a Computer Networks – Network structures – Network Architectures– The OSI reference model – Services

Unit II

The Physical layer: The theoretical basis for data communication – Transmission media – Analog Transmission – Digital Transmission – Transmission and Switching – Integrated Service Digital Network (ISDN) – Terminal Handling.

Unit III

The Medium Access Sub Layer: Local and Metropolitan Area Network – The ALOHA protocols. The Data Link Layer: Data Link Layer Design Issues – Error Detection and correction – Elementary data link protocols.

Unit IV

The Network Layer: Network layer design issues – Routing algorithms – Congestion control algorithm. The Transport Layer: Transport layer design issues – connection management. The Session Layer: The Session Layer design issues – Remote Procedure Call.

Unit V

The Presentation Layer: Presentation Layer design issues – Abstract Syntax Notation – Data Compression Techniques – Cryptography. The Application layer: Application Layer design issues – File transfer, access and management – Electronic Mail – Virtual Terminals – Other Applications.

Text Book:

1. Andrew S Tanenbaum – Computer Networks PHI

Books for Reference:

1. P.Green – Computer Network Architecture and Protocols, Plenum 1982
2. Harry Katzan– An introduction to distributed Data processing, A Petrocelli Book Network.

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CORE COURSE – IX – JAVA PROGRAMMING LAB

1. Program to sort the given numbers.
2. Program to print the Multiplication Table.
3. Program to reverse the given number.
4. Program to remove the duplicate from an array.
5. Program to perform Matrix Addition, Subtraction and Multiplication.
6. Program to Display Name Alphabetically.
7. Demonstrate the String Operations
8. Demonstrate Package Creation and use in Program
9. Demonstrate Inner Class
10. Demonstrate Inheritance
11. Demonstrate 2D Shapes on Frames
12. Demonstrate Text and Fonts
13. Demonstrate Event Handling for various types of Events
14. Implement Multicasting Techniques
15. Demonstrate the use of Exception Handling
16. Create a Dialog Box
17. Create a Tool Bar, Menu & Popup Menu
18. Implement File Handlings
19. Demonstrate Applet Programming
20. Program to accept two numbers in TextField & Add these two numbers.
21. Program to Draw Bar Charts.
22. Demonstrate JDBC on Applet/Application
23. Demonstrate Multithreading

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ELECTIVE COURSE - II (A) – COMPUTER ORIENTED NUMERICAL METHODS

Unit I

Algebraic and Transcendental Equations: The Bisection Method – Regula Falsi Method – Newton Raphson Method – Horner's Method.

Unit II

Simultaneous Linear Algebraic Equations: Gauss Elimination method – Method of Triangularisation – Crout's method – Gauss Jacobi Method – Gauss Seidel Method.

Unit III

Finite Differences: Difference Table – Interpolation – Newton Forward – Newton Backward– Central Difference Tables – Gauss Forward – Gauss Backward – Bessel's Formula – Lagrange's interpolation formula

Unit IV

Numerical Differentiation and Integration: Newton's forward and Backward difference Formula – Compute the derivatives – Trapezoidal Rule – Simpson's Rule – Romberg's method.

Unit V

Numerical Solutions of Ordinary Differential Equations: Taylor's series method – Picard's method – Euler's method – Modified Euler's method – Runge Kutta Methods – Milne's Predictor – Corrector Method.

Text Book:

1. Numerical Methods in Science and Engineering – M.K.Venkataraman, The National Publishing company

Books for Reference:

1. Computer Oriented Numerical Methods – V.Rajaraman, PHI
2. Numerical Method – A Singaravelu.

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ELECTIVE COURSE- II (B) – RESOURCE MANAGEMENT TECHNIQUE

Unit I

Linear Programming Problem: Introduction–Mathematical formulation–Graphical solution method–General Linear Programming Problem–Canonical and standard forms of LPP simplex method solution– Feasible solution– Basic solution – Basic feasible solution– Degenerate feasible solution.

Unit II

Nature and features of OR–Modelling in OR–Classification of models–General solution methods for OR models–Methodology of OR–**Replacement problem:** Replacement of equipment/asset that deteriorates gradually–replacement of equipment that fails suddenly.

Unit III

Game Theory– Two person zero sum games–The maximin– minimax principle–Games without saddle points–mixed strategies–Graphical solution of 2xn and mx2 games– General solution of mxn rectangular games.

Unit IV

Network scheduling by PERT/CPM–Network and basic components–Drawing Networks–Critical path analysis–PERT analysis.

Unit V

Transportation Problem: Definition of a Transportation problem–Mathematical formulation–**Obtaining Initial solution:** North West Corner method–Least Cost method–Vogle's Approximation method– Modi method–Unbalanced Transportation solution.

Text Book:

1. OPERATION RESEARCH 9th Edition by Kanti Swarap, P.K. Gupta and Manmohan.

Books for Reference:

1. Linear Programming 6th Edition by M.K. Venkataraman.
2. Operation Research 7th Edition by Sundaresan & Others
3. Operation Research 6th Edition by Hamdy A Taha.

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ELECTIVE COURSE - II (C) – THEORY OF COMPUTATION

Unit I   AUTOMATA
Introduction to formal proof – Additional forms of proof – Inductive proofs –Finite
Automata (FA) – Deterministic Finite Automata (DFA) – Non-deterministic Finite
Automata (NFA) – Finite Automata with Epsilon transitions.

Unit II   REGULAR EXPRESSIONS AND LANGUAGES
Regular Expression – FA and Regular Expressions – Proving languages not to be
regular – Closure properties of regular languages – Equivalence and minimization of
Automata.

Unit III   CONTEXT-FREE GRAMMARS AND LANGUAGES
Context-Free Grammar (CFG) – Parse Trees – Ambiguity in grammars and
languages –Definition of the Pushdown automata – Languages of a Pushdown
Automata –
Equivalence of Pushdown automata and CFG– Deterministic Pushdown Automata.

Unit IV   PROPERTIES OF CONTEXT-FREE LANGUAGES
Normal forms for CFG – Pumping Lemma for CFL – Closure Properties of CFL
– Turing Machines – Programming Techniques for TM.

Unit V   UNDECIDABALITY
A language that is not Recursively Enumerable (RE) – An undecidable problem
that is RE – Undecidable problems about Turing Machine – Post's Correspondence
Problem –
The classes P and NP.

Text Book:

1. J.E. Hopcroft, R. Motwani and J.D. Ullman, "Introduction to Automata Theory, Languages and Computations", second Edition, Pearson Education, 2007.

Books for Reference:

1. H.R. Lewis and C.H. Papadimitriou, "Elements of the theory of Computation", Second Edition, Pearson Education, 2003.
2. Thomas A. Sudkamp," An Introduction to the Theory of Computer Science, Languages and Machines", Third Edition, Pearson Education, 2007.
3. Raymond Greenlaw an H.James Hoover, " Fundamentals of Theory of Computation, Principles and Practice", Morgan Kaufmann Publishers, 1998.
4. J. Martin, "Introduction to Languages and the Theory of computation" Third Edition, Tata Mc Graw Hill, 2007

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I YEAR – II SEMESTER
COURSE CODE: 7MC12E4

ELECTIVE COURSE – III (A) – OPEN SOURCE TECHNOLOGY

Unit I

Introduction : Need of Open Sources – Advantages of Open Sources – Applications – Commercial aspects of Open Source movement – Certification courses issues – Open source Operating Systems : LINUX – Introduction – General Overview – Kernel mode and User mode process – Advanced concepts : Scheduling - Time Accounting – Personalities – Cloning and Backup your Linux System – Linux Signals – Development with Linux.

Unit II

MySQL: Introduction - Setting up an account - Starting, Terminating and writing your own MySQL Programs - Record Selection Technology - Working with Strings - Date and Time - Sorting Query Results module - Generating Summary - Working with Metadata - Using Sequences – MySQL and Web - PHP and SQL database : PHP and LDAP – PHP Connectivity – Sending and receiving emails – PHP Database Connectivity : Retrieving data from MYSQL - Manipulating data in MySQL using PHP - Simple programs using MySQL.

Unit III

PHP Introduction: What is PHP? - Basic Syntax of PHP – programming in web environment - Common PHP Script Elements - Using Variables - Constants – Data types - Operators ; Statements - Working With Arrays -Using Functions – OOP – String manipulation and regular expression - File and Directory Handling - Including Files - File Access - Working With Forms : Processing Forms - Form Validation – Introduction to advanced PHP concepts – Simple programs using PHP.

Unit IV

PYTHON : Syntax and Style – Python Objects – Numbers – Sequences – Strings – Lists and Tuples – Dictionaries – Conditionals and Loops – Files – Input and Output – Errors and Exceptions – Functions – Modules – Classes and OOP – Execution Environment.

Unit V

Open Source tools and technologies : Web Server - Apache Web Server – Working with Web Server - Configuring and using apache web services - Open source software tools : Browsers - Processors - Compilers - Model driven architecture tools - Eclipse IDE platform : Architecture - History - Simultaneous Releases - Case study : E-Governance – Government Policy toward Open Source.

Text Books:
1. James Lee and Brent Ware, Open Source Web Development with LAMP using Linux, Apache, MySQL, PERL and PHP, 2003.
2. Wesley J. Chun, "Core Phython Programming", Prentice Hall of India, 2006

Books for Reference:
1. Rem Card, Eric Dumas and Frank Mevel, The Linux Kernel Book, John Wiley publications sons, 2003.

2. *Steve Suchring, MySQL Bible, John Wiley sons, 2002*
3. *Rasmus Lerdorf and Levin Tatroe, Programming PHP, O'Reilly Publications, 2002*

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ELECTIVE COURSE – III (B) – FUNDAMENTALS OF GRID AND CLOUD COMPUTING

Unit I
   FUNDAMENTALS OF GRID COMPUTING The Grid –Past, Present and Future –Applications of Grid Computing Organizations and their Roles.GRID COMPUTING ARCHITECTURE Grid Computing Anatomy –Next Generation of Grid Computing Initiatives –Merging the Grid Services Architecture with Web Services Architecture.

Unit II
   GRID COMPUTING TECHNOLOGIES OGSA –Sample Use Cases that drive OGSA Platform Components –OGSI and WSRF–OGSA Basic Services –Security Standards for Grid Computing –High Level Grid Services.

Unit III
   FUNDAMENTALS OF CLOUD COMPUTING Fundamentals –Shot history of cloud computing –Cloud Architecture –Cloud Storage – Cloud Service – Pros and Cons of cloud computing – Benefits from cloud computing.
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Unit IV
   CLOUD SERVICES Need for Web - Based Application – The cloud Service Development – Cloud Service, Development Types –Cloud Service development tools.

Unit V
   Microsoft Office Live –SaaS –LiveMesh.com, Google Apps – SaaS A Comparison of Cloud Computing Platforms - Common Building Blocks , Which Cloud to choose – Problems and Future Directions.

Text Books:

1. Joshy Joseph & Craig Fellenstein, "Grid Computing", Pearson Education, 2004.
2. Michael Miller, "Cloud Computing: Web - Based Applications That Change the Way You Work and Collaborate Online", Que, 2008.

Books for Reference:

1. Fran Berman, Geoffrey Fox, J.G. Anthony Hey, "Grid Computing : Making the Global Infrastructure a reality", John Wiley & sons, 2003.
2. Hmar Abbas, "Grid Computing: A Practical Guide to technology and Application Charles River media, 2003.

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ELECTIVE COURSE - III (C) – COMPUTER GRAPHICS

Unit I   Introduction

Computer-aided design – Graphics, charts and models – Computer art – Computer Animation– Graphical user interfaces – Graphics for home use – Image Processing – Display Devices – Interactive Input devices – Display processors – Graphic software – Output primitives – Points and lines – Line drawing algorithms – Circle Generation algorithms – Character Generation – Instruction set for display processor.

Unit II   Attributes of Output Primitives

Line Styles – Color and Intensity – Area filling – Character Attributes – Bundled Attributes – Two Dimensional Transformation – Basic Transformations – Matrix Representation and homogeneous co-ordinates – Composite transformations – Other transformations – Transformation commands, raster methods for transformations.

Unit III   Windowing and Clipping

Windowing concepts – Windowing algorithms – Window to Viewport transformation – Segments: Segment concepts – Segment files – Segment attributes – Multiple workstations – Interactive Input Methods: Physical input devices – Interactive Picture – Construction techniques – Input functions.

Unit IV   Three Dimensional concepts

Three dimensional coordinate systems – Three dimensional display techniques – Three dimensional Graphics Packages – Three dimensional Transformations: Translation – Scaling– Rotation – Rotation about an arbitrary axis – Other transformations – Transformation commands.

Unit V   Three Dimensional Viewing

Projections – Viewing Transformation – Implementation of Viewing operations – Hidden surface and Hidden line removal: classification algorithms – back face removal – Depth buffer method – Scan line method.

Text Book:

1. Donald Hearn, M. Pauline Baker, Computer Graphics, 2nd Edition McGraw Hill 1995

Books for Reference:

1. Newman and Sproul, Interactive Computer Graphics, Mcgraw Hill
2. Steven Harrington, Computer Graphics – A Programming Approach, McGraw Hill

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CORE COURSE - X – PRINCIPLES OF COMPILER DESIGN

Unit I   Introduction

Compilers: Analysis of source program; Phases of Computer – Tools of Computer – Grouping of phases, Simple one-pass compiler – grouping of phases. Simple one-pass compiler – Overview – Syntax definition – Syntax – directed translation – Parsing – translator for simple expressions – Lexical analysis – Removal of white space and comments – constants – Recognizing identifiers and keywords – A lexical analyzer – Role of lexical analyzer – Input buffering – Specification of tokens – Recognition of tokens.

Unit II   Symbol Tables

Incorporating a symbol table – Symbol tables – Entries – list data structures for symbol table– Hash tables – Scope information – Parsing – Principles & Top down parsing – Predictive parsing– left recursion – Role of Parser – Context free grammar – Writing a grammar – Top down parsing – simple bottom up parsing – Shift reduce parsing operator – Precedence parsing– SLR parsing – LALR parsing – Canonical parsing.

Unit III   Syntax-directed translation:

A translator for simple expressions – Abstract and concrete syntax – Adapting translation scheme – Optimising translator – Syntax-directed definitions – Construction of syntax trees – Bottom up evaluation of S-attributed definitions, L-attributed, Top–Down translation, Type-Checking type systems, Specifications of simple type checker.

Unit IV   Runtime Organization

Source language issues: Storage organization – Storage allocation strategies – Parameter Passing – Intermediate code generation – Intermediate languages – Declarations – Assignments – Boolean expressions – case statements.

Unit V   Code Generation

Issues in design of code generator: target machine – Run time storage management – Basic blocks and flow graphs – A simple code generator – Code optimization – Introduction – Principles sources of optimizations of basic blocks – Loops in flow graphs.

Text Book:

1. A.S.Aho, R.Sethi, and J.D.Ullman, "Compilers Princuiples, Techniques and Tools" Addison Wesley Publishing Company 1986.

Book for Reference:

1.   Allen I. Holub, "Compiler Design in C" PHI 1993.

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II YEAR – III SEMESTER
COURSE CODE: 7MC13C2

CORE COURSE- XI – SOFTWARE ENGINEERING

Unit I

Phases in software development – Requirement Analysis – Software design – Coding – Testing– Maintenance – Effort Distribution with Phases – Error Distribution – Software Development Process Model: Waterfall model – Prototyping Interactive Enhancement – Spiral Model – Role of Management in Software Development, Metrics and Measurements – Software Requirements Specifications (SRS) – Role of SRS.

Unit II

Problem Analysis: Structuring Information – Data flow Diagram and Data Dictionary – Structured Analysis – Prototyping Requirements Specification Characteristics of an SRS – Specification Languages Structure of Requirements Document – Validation: Reading – construction scenarios – Requirement Review Automated cross Referencing – Prototyping – Metrics: Function Points – Number of Errors found – Change request frequency.

Unit III

Planning a Software project – Cost estimation – Uncertainties in cost estimation – Single variable Models: COCOMO Model – software size Estimation – Project Scheduling: Average Duration Estimation – Milestones, Staffing and Personnel planning – Raleigh Curve – Team structure – Software configuration Management configuration identification – configuration control – status accounting and auditing – software configuration and management – Quality assurance plans: verification and validation – Inspection and reviews – Output of a software development project – Project monitoring plans: Timesheets – Reviews – Cost – Schedule – Milestone Graph – Risk Management: Risk Management Activities – Risk Identification – Risk Analysis and Prioritization – Project planning and Risk management.

Unit IV

System Design: Design Objectives, Design Partitioning – Problem Partitioning – Abstraction, Top–Down and Bottom–Up strategies, Module Level Concepts – Coupling and Cohesion, Design Methodology – Structured Design – Structure Charts – Design Methodology – Transaction Analysis, Design Specification, Verification – Design Reviews – Automated Cross-Checking.

Unit V

Testing Fundamentals: Error Fault – Failures – Reliability – Levels of Testing – Test case and Test criteria – Test Oracle – Psychology of Testing – Top–Down and Bottom–Up Approaches– Functional Testing: Equivalence class portioning – Boundary value Analysis: case Effect Graphing – Test case Generations – Instrumentation for structural testing – Complexity Based Criteria – Mutation Testing – Combination Functional and structural Approaches, Testing Process – Test Plan – Test case Specification and Test case – Execution and Analysis, comparison of different V & V Techniques, Matrices, Reliability Assessment – Programmer Productivity – Error Removal Efficiency – Specifications for system testing – System

Test Report – Error Report on a given problem.

Text Book:
1. Pankej Jalote – An Integrated Approach to Software Engineering, 2nd Edition – Narosa Publishing House, New Delhi 1997

Books for Reference:
1. Richard E. Fairley, "Software Engineering – A practitioner's approach", McGraw Hill 1982
2. Martin L Shooman, "Software Engineering – Design, Reliability and Management" McGraw Hill 1983

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CORE COURSE – XII – VISUAL PROGRAMMING

Unit I

The .Net Frame work – CLR – Namespace – Assemblies – Class Library – Basic Terminology – .Net Component – .Net garbage collection.

Unit II

Visusalbasic.Net – Datatypes – Operators – Arrays – dynamic arrays – String Handling –Conditional and Looping Statement – Subprocedures and functions – Scope – Structures –Modules – Exception Handling – windows Forms – MDI Forms – events – Msgbox – InputBox – working with Multiple forms – Dialogboxes – Passing forms – Anchoring and Docking Controls – event Handling.

Windows Controls: Text boxes – RichText Boxes – Labels – Link Labels – Buttons – Checkboxes – Radio Buttons – panels – Listboxes – Combo Boxes – Scroll Bars – Splitters –Track Bars – Pickers – Notify Icons – Timers – Menus – Built in Dialog Boxes – Image Lists– Tree and List Views – Toolbars – Status Bars – Progress Bars – Tab Controls.
Graphics and file Handling.

Unit III

ASP.Net – File Types – Importing Namespaces – usage of Global.asax file – The Page class – HttpRequest – HttpResponse – Server Utility – Basic Web Controls – List controls –Validation and Rich Controls – Data Controls – HTML Server controls – Custom Controls –State Management – Tracing – Logging and Error Handling – Overview of AJAX Controls.

Unit IV

Object Oriented Programming

Class – Objects – Abstraction – Encapsulation – Inheritance – Polymorphism – Overloading – Overriding – shadowing – Implementing Security – Security model – Forms Authentication –Windows Authentication.

Unit V

ADO.Net: Overview of ADO.Net – Database Access in the Internet world – Characteristics of ADO.Net – Data Objects – Data Namespace – SQL Basics – Data Binding Controls – DataSet – Data Table – Data row – Data column – Data List – Data Grid – Repeater.

Text Books:
1. Visual Basic .Net Programming – Steven Holzner – Black Book – Dreamtech Press.
2. The Complete Reference for ASP.Net – Matthew MacDonald – Tata McGraw–Hill.

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CORE COURSE – XIII – VISUAL PROGRAMMING LAB

Note: Use Visual Studio .Net 2005 Version or Above.

VB.Net

1. Write a Calculator program using Dynamic Controls.
2. Write a Puzzle Game Using Dynamic Objects.
3. Write a program using MDI forms.
4. Write a Program using OOPS Concept.
5. Write a Text Editor Program.
6. Write a Program to Draw the Picture and Save It.

ASP.Net

7. Create a Website program using Master Page.
8. Write a Program using All Validation Controls.
9. Write a Program using Cookies, session and Application objects.
10. Write a program for Login Verification.
11. Write a program using simple AJAX controls.

ADO.Net

12. Write a Salary Bill Program.
13. Write a Students Mark List Program.

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ELECTIVE COURSE - IV (A) – MULTIMEDIA AND ITS APPLICATIONS

Unit I

Introduction – Definition – Multimedia Hardware – Multimedia Software – Multimedia Networking – Multimedia Applications – Multimedia Environments – Multimedia Computer Components – Multimedia Standards – Multimedia PC

Unit II

Multimedia Information Systems: Limitations in workstation Operating Systems. Middleware System Services Architecture: Goals of Multimedia System Services – Multimedia System Services Architecture Text: Elements of Text – Using Text in Multimedia Applications – Graphics: Element of Graphics – Images and color – Graphics file and Application formats – Obtaining Images for Multimedia use – Using Graphics on multimedia applications

Unit III

Digital Audio Representation and Processing: Uses of Audio in Computer applications – Digital Representations of sound – Transmission of Digital Sound – Digital Audio Signal Processing, Video Technology: Raster Scanning Principles – Sensors for TV Cameras – Color fundamentals – Color Video – Digital Video and Image Compression: Evaluating Compression System – Video Compression techniques – JPEG Image compression standard – MPEG motion Video compression standard.

Unit IV

Multimedia Communications Systems: Applications, Network Services – Network Protocols. Multimedia Conferencing: Teleconferencing systems – Requirements for Multimedia Communications – Multimedia Conferencing Architectures.

Unit V

Multimedia and Internet: Internet – Client/Server technology – Communications protocol – Internet addressing – Internet functions – HTML and Web Authoring. Multimedia Development Team: Team approach – Assembling a multimedia Production Team – Multimedia Development Process: Multimedia Project – Structured Multimedia Development– Costing multimedia Project.

Text Books:
1. For Unit I: Tay Vaughan, "Multimedia making it work", 4th Edition Tata McGraw–Hill Edition, 2000
2. For Units II, III, IV: John F.Koegel Buferd, "Multimedia Systems", Published by Addison Wesley Longman, 3rd Edition year 2000
3. For Unit II, V: David Hillman, "Multimedia Technology and Applications", Galgotia Publications Pvt. Ltd., Year 1998

Book for Reference:
1. Fred T.Hofstetter, "Multimedia Literacy", McGraw Hill, 1995.

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ELECTIVE COURSE – IV (B) – DIGITAL IMAGE PROCESSING

Unit I

Elements of Digital Image Processing System – Acquisition Storage, processing –Communication, display – structure of the Human eye – Image formulation in the eye – Image Sampling and quantization – basic relationship between pixels. Basic image transformation – Introduction to Fourier transform and DFT – properties of two dimensional Fourier transform – separable image transforms – Walsh, Hardmard, Discrete cosine –HaarmStant, Karhunern-Leove Transforms – Hotelling transforms.

Unit II

Spatial domain methods – Enhancement by point processing – contrast stretching dynamic range compression – Gray level and bit plane slicing – Histogram processing – Image subtraction – Image averaging – Spatial filtering – Smoothing, Sharpening filters – Frequency domain methods – Low pass, High passand Homomorphic filtering – Color image processing.

Unit III

Degradation models – Diagonalisation of circulant and block circulant matrices and its effect on the degradation model – Algebraic approach to restoration – Inverse filtering – Least mean square filter – Interactive restoration – Restoration in the spatial domain.

Unit IV

Need and scope of image data compression – Coding, interpixel, psychovisual redundancy – Fidelity criteria – Image compression models – Lossless compression – Variable length, bit plane and losses predictive coding – Lossy compression – Lossy predictive coding – Transform coding – image compression standards

Unit V

Basic Problems in pattern recognition system design – Linear discriminant function pattern classification using statistical approach – bayers classifer – Perception criterion function – relaxation algorithm – Ho Kashyap procedure – Synatactic pattern recognition – Concepts of formal language theory – Formulation of syntactic pattern recognition system – AI approach to pattern recognition problems – Applications of pattern recognition.

Text Books:

1. Gonzalez, Woods, Digital Image Processing, Addison Wesley 1993
2. J.T.Tou, R.C.Gonzalez, pattern Recognition principles, Addison Wesley 1974

Books for Reference:

1. Jain A F Fundamentals of Digital Image Processing, Prentice Hall 1995

2. Pratt, Digital Image Processing Wiley 2nd edition 1991
3. Gregory A Baxes, Digital Image Processing John Wiley 1994.

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II YEAR – III SEMESTER
COURSE CODE: 7MCI3E3

ELECTIVE COURSE - IV (C) – WEB TECHNOLOGY

Unit I   HTML & CSS
HTML Introduction – Basic HTML – The Document Body – Text –Hyperlinks –Adding MoreFormatting – Lists – Tables – Using Color and Images – Images –Multimedia Objects – Frames –Forms – The HTML Document Head in Detail – XHTML – CSS Introduction – Using Styles – Definingyour Own Styles – Properties and Values in Styles – Formatting Blocks – Layers.

Unit II   XML & Ajax
Basic XML – Document Type Definition – XML Schema – Document Object Model – Presenting XML –Using XML Parser - Essential Ajax - Ajax and the DOM, XML, CSS and Dynamic HTML.

Unit III   JAVA Script
What is Dynamic HTML – Java Script Basics – Variables – String Manipulation –Mathematical Functions – Statements – Operators – Arrays – Functions – Data and Objects – Regular Expressions –Exception Handling – Built-in Objects – Events –Dynamic HTML with Java Script

Unit IV   PHP & MySQL
Why PHP and MySQL - Server-Side Web Scripting - Getting Started with PHP – Adding PHP to HTML -Syntax and Variables - Control and Functions - Passing Information between Pages – Strings – Arrays and Array Functions – Numbers - MySQL Database Administration – PHP/MySQL Functions –Displaying Queries in Tables - Building Forms from Queries.

Unit V   Perl
The Basic Perl Program – Scalars – Arrays – Hashes Control Structures –Processing Text – Regular Expressions – Using Files – Subroutines – Bits and Pieces –Handling XML with Perl – Handling the DOM with Perl.

Text Books:
1. Web Programming (Building Internet Applications), Chris Bates 2nd edition, Wiley India private Ltd; New Delhi– 2002. Chapters Covers: 1-8, 14
2. Ajax Bible,Steven Hoizner,Wiley India private Ltd;NewDelhi–2007Chapters Covers1,8-11
3. PHP5 and MySQL Bible, Tim Converse and Joyce Park with Clark Morgan, Wiley
    Publishing, Inc. 2004. Chapters Covers: 1-10, 14–17

Book for Reference:
1. Steven M. Schafer, "HTML, CSS, JavaScript, Perl, Python and PHP - Web standards Programmer's Reference", Wiley Publishing, Inc. 2005.

2. Mitch Conrad, Kay Ether, Michal D. Thomas, "XML problem Design – solution",
Wiley India private Ltd; New Delhi- 2006.

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ELECTIVE COURSE – V (A) – DATA MINING AND WAREHOUSING

Unit I

Introduction: Definition of data mining – data mining vs query tools – machine learning – taxonomy of data mining tasks – steps in data mining process – overview of data mining techniques.

Unit II

Data Warehousing: Definition – Multidimensional Data Model – Data Cube – Dimension Modelling – OLAP Operations – Warehouse Schema – Data Warehouse Architecture – Data Mart – Meta Data – Types of Meta Data – Data Warehouse Backend Process – Development Life Cycle.

Unit III

Data Pre-Processing And Characterization: Data Cleaning – Data Integration and Transformation – Data Reduction – Discretization and Concept Hierarchy Generation – Primitives – Data Mining-Query Language – Generalization – Summarization – Analytical Characterization and Comparison – Association Rule – Mining Multi Dimensional data from Transactional Database and Relational Database.

Unit IV

Classification: Classification – Decision Tree Induction – Bayesian Classification –Prediction – Back Propagation – Cluster Analysis – Hierarchical Method –Density Based Method – Grid Based Method – Outlier Analysis.

Unit V

Cluster analysis: Types of data – Clustering Methods – Partitioning methods – Model based clustering methods – outlier analysis.Advanced topics: Web Mining – Web Content Mining – Structure and Usage Mining – Spatial Mining – Time Series and Sequence Mining – Graph Mining.

Text Books:
1. Paulraj Ponnaiah, Data Warehousing Fundamentals, Wiley Publishers, 2001.
2. Jiawei Han, Micheline Kamber, Data Mining: Concepts and Techniques, Morgan
    Kaufman Publishers, 2006.
Books for Reference:
1. Usama M.Fayyad,Gregory Piatetsky Shapiro,Padhrai Smyth,Ramasamy
    Uthurusamy, Advances in Knowledge Discover and Data Mining,The M.I.T.Press,
    2007.
2. Ralph Kimball,Margy Ross, The Data Warehouse Toolkit, John Wiley and Sons
    Inc.,2002.
3. Alex Berson, Stephen Smith, Kurt Thearling, Building Data Mining Applications

for CRM, Tata McGraw Hill, 2000.

4. Margaret Dunham, Data Mining: Introductory& Advanced Topics, Prentice Hall,2002.

5. Daniel T. Larose John Wiley & Sons, Hoboken, Discovering Knowledge in Data: An Introduction to Data Mining, New Jersey, 2004.

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ELECTIVE COURSE – V (B) – CYBER SECURITY

Unit I

Introduction to information systems, Types of information Systems, Development of Information Systems, Introduction to information security, Need for Information security, Threats to Information Systems, Information Assurance, Cyber Security, and Security Risk Analysis.

Unit II

Application security (Database, E-mail and Internet), Data Security Considerations-Backups, Archival Storage and Disposal of Data, Security Technology-Firewall and VPNs, Intrusion Detection, Access Control. Security Threats –Viruses, Worms, Trojan Horse, Bombs, Trapdoors, Spoofs, E-mail viruses, Macro viruses, Malicious Software, Network and Denial of Services Attack, Security Threats to E-Commerce- Electronic Payment System, e-Cash, Credit/Debit Cards. Digital Signature, public Key Cryptography.

Unit III

Developing Secure Information Systems, Application Development Security, Information Security Governance & Risk Management, Security Architecture & Design Security Issues in Hardware, Data Storage & Downloadable Devices, Physical Security of IT Assets, Access Control, CCTV and intrusion Detection Systems, Backup Security Measures.

Unit IV

Security Policies, Why Policies should be developed, WWW policies, Email Security policies, Policy Review Process-Corporate policies-Sample Security Policies, Publishing and Notification Requirement of the Policies.

Unit V

Information Security Standards-ISO, IT Act, Copyright Act, Patent Law, IPR. Cyber Laws in India; IT Act 2000 Provisions, Intellectual Property Law: Copy Right Law, Software License, Semiconductor Law and Patent Law.

Text Books:
1. Charles P. Pfleeger, Shari Lawerance Pfleeger, "Analysing Computer Security", Pearson Education India.2010
2. V.K. Pachghare, "Cryptography and information Security", PHI Learning Private
    Limited, Delhi India.2011

Books for Reference:
1. Dr. Surya Prakash Tripathi, Ritendra Goyal, Praveen kumar Shukla ,"Introduction to Information Security and Cyber Law" Willey Dreamtech Press.
2. Schou, Shoemaker, " Information Assurance for the Enterprise", Tata McGraw Hill.
3. CHANDER, HARISH," Cyber Laws And It Protection", PHI Learning Private

Limited , Delhi ,India

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II YEAR – III SEMESTER
COURSE CODE: 7MC13E6

ELECTIVE COURSE– V (C) – MOBILE COMPUTING

Unit I

INTRODUCTION: Laptop computing – Wireless Technologies – Mobility and Portability – Overview of IP and Routing – Mobile networking – Example Architectures – The role of IETF in mobile networking.

Unit II

CELLULAR COMMUNICATION CONCEPTS: Wireless transmission – Multiplexing –Modulation – Spread Spectrum – Cellular system – GSM architecture – protocols – handover procedure – security.

Unit III

ADVERTISEMENT AND REGISTRATION: Agent solicitation and Discovery Mechanism – Router Discovery Protocol – Agent advertisement – Agent operation – Agent discovery – registration overview – Authentication overview – Registration request, reply and extensions – Mobile node registration procedures – Foreign agent registration actions – Home agent Processing

Unit IV

DATA GRAMS AND ROUTE OPTIMIZATIONS: Tunneling overview and terminology– Encapsulation – Routing failures – Tunnel management – Decapsulation – Unicast broadcast and multicast data gram routing – Mobile routers – Route optimization – Message format – Extensions – Mobile key requests.

Unit V

IP VERSIONS AND DHCP: Mobility support in IP version 6 – smooth hand off – Renumbering – DHCP – WAP protocol.
SECURITY AND MOTIVATION DETECTION: Ingress filtering – Reverse tunneling – Broadcast preference extensions – Movement detection – Localizing registrations.

Text Books:

1. Charles E.Perkins, "Mobile IP: Design Principles and Practices", Addison Wesley, USA 1999
2. David J Goodman "Wireless Personal Communication systems" Addison Wesley Wireless communication series USA 1999

Books for Reference:

1. William Lee, "Mobile Telecommunications" McGraw Hill Singapore 2001

2. Jochen Schiller – "Mobile Communication" Pearson Education New Delhi 2003
3. Raj Pandya, "Mobile and Personal Communication Systems and Services" IEEE Press, USA 2004.

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II YEAR – IV SEMESTER
COURSE CODE: 7MC14PR

CORE COURSE – XIV – PROJECT WORK

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