

**Dr. M.G.R. Educational & Research Institute
(Deemed University)
Maduravoyal, Chennai- 600 095.
B.TECH (Computer Science & Engineering)
FULL TIME
(From 2005 Onwards)**

List of subjects identified for the above course:

Semester No: 3

Theory:

Course Code	Course Title	L	T	P	C
BCS201	Data Structures & Algorithms	3	1	0	4
BCS203	Object Oriented Programming	3	1	0	4
BMA213	Discrete Mathematics	3	1	0	4
BMA203	Mathematics III	3	1	0	4
BEC231	Electron devices and Circuits	3	1	0	4
BEE231	Electrical Engineering	3	1	0	4

BCS221	Data Structures Using C++	0	0	3	1
BEC241	Electron Devices & Circuit Lab	0	0	3	1

Subtotal: 26

BMA213 is the equivalent of BMA204 offered as per the previous syllabus

BEC231 is the equivalent of BEC211 offered as per the previous syllabus

BEE231 is the equivalent of BEE211 offered as per the previous syllabus.

BCS221 is the equivalent of BCS222 offered as per the previous syllabus

BEC241 is the equivalent of BEC221 offered as per the previous syllabus

Semester No: 4

Theory:

Course Code	Course Title	L	T	P	C
BCS202	Data Base Management Systems	3	1	0	4
BCS204	Artificial Intelligence	3	0	0	3
BCS206	Computer Graphics & Multimedia	3	1	0	4
BMA202	Mathematics IV	3	1	0	4
BEC232	Basic Principles of Communication	3	0	0	3
BEC234	Digital Electronics	3	0	0	3

Practical:

BCS222	DBMS Lab	0	0	3	1
BEC244	Digital Electronics Lab	0	0	3	1
BCS224	In-plant Training	0	0	3	1

Subtotal: 24

BCS206 is the equivalent of BCS205 offered as per the previous syllabus

BMA202 is the equivalent of BMA215 offered as per the previous syllabus

BEC232 is the equivalent of BEC214 offered as per the previous syllabus

BEC234 is the equivalent of BEC202 offered as per the previous syllabus

BCS222 is the equivalent of BCS221 offered as per the previous syllabus
 BEC244 is the equivalent of BEC233 offered as per the previous syllabus
 BEC224 is the equivalent of BEC223 offered as per the previous syllabus

Semester No: 5

Theory:

Course Code	Course Title	L	T	P	C
BCS301	System Software	3	1	0	4
BCS303	Computer Architecture	3	1	0	4
BCS305	Advanced Java Programming	3	0	0	3
BCS307	Operating Systems	3	0	0	3
BCS309	Software Engineering	3	0	0	3
BEC333	Microprocessor and Applications	3	1	0	4

Practical:

BCS321	Operating Systems Lab	0	0	3	1
BEC341	Microprocessor and peripheral interfacing lab	0	0	3	1

SubTotal: 23

Semester No: 6

Theory:

Course Code	Course Title	L	T	P	C
BCS302	Computer Networks	3	0	0	3
BCS304	Principles of Compiler design	3	0	0	3
BCS306	Web Technology	3	0	0	3
BEC304	Digital Signal Processing	3	1	0	4
BCSE02/BCSE04 BCSE06/BCSE08 BCSE10/BCSE12	Elective I	3	0	0	3
BCSE14/BCSE16 BCSE18/BCSE20 BCSE22/BCSE24	Elective II	3	0	0	3(1)

Practical:

BCS322	Network Programming Lab	0	0	3	1
BCS324	System Software and Compiler Design Lab	0	0	3	1
BCS326	Three tier Application Project	0	0	3	1

SubTotal: 22(1)

Semester No: 7**Theory:**

Course Code	COURSE TITLE	L	T	P	C
BCS401	Software Quality and Testing	3	1	0	4
BCS403	. Net Framework	3	0	0	3
BCS405	Object Oriented System Analysis and Design	3	0	0	3
BCS407	Data Mining and Data Warehousing	3	0	0	3
BCSE01/BCSE03 BCSE05/BCSE07 BCSE09/BCSE11	Elective III	3	0	0	3(1)
BCSE13/BCSE15 BCSE17/BCSE19 BCSE21/BCSE23 BCSE25	Elective IV	3	0	0	3(1)

Practical:

BCS421	. Net Lab	0	0	3	1
BCS423	Comprehension	0	0	0	2
BCS425	Project (Phase – I)	0	0	4	2
BCS427	Software System Development Lab with IBM Rational Rose	0	0	3	1

Subtotal: 25(2)**Semester No: 8****Theory:**

Course Code	COURSE TITLE	L	T	P	C
BMA402	Principles of Management	3	0	0	3
BCSE26/BCSE28/ BCSE30/BCSE32/ BCSE34/BCSE36/ /BCSE38	Elective V Or Special Elective -I	3	0	0	3(1)
BCSE40/BCSE42/ BCSE44/BCSE46/ BCSE48/BCSE50/ BCSE52	Elective VI Or Special Elective - II	3	0	0	3(1)

Practical:

BCS422	PROJECT (Phase – II)	0	0	12	6
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Subtotal: 15(2)**Total Credits: 135(5)**

List of Electives**ELECTIVE – I 6TH SEMESTER**

BCSE02	PRINCIPLES OF PROGRAMMING LANGUAGES	3	0	0	3
BCSE04	ALGORTHIMIC GRAPH THEORY	3	0	0	3
BCSE06	DESIGN OF ALGORITHMS	3	0	0	3
BCSE08	UNIX INTERNALS	3	0	0	3
BCSE10	BUSINESS COMMUNICATION	3	0	0	3
BCSE12	ADVANCED OPERATING SYSTEM	3	0	0	3

ELECTIVE - II 6TH SEMESTER

BCSE14	HIGH PERFORMANCE MICROPROCESSOR	3	0	0	3
BCSE16	ADVANCED SOFTWARE ENGINEERING	3	0	0	3
BCSE18	COMPUTER PERIPHERALS AND INTERFACING	3	0	0	3
BCSE20	DECISION SUPPORT SYSTEM	3	0	0	3
BCSE22	EMBEDDED SYSTEMS	3	0	0	3
BCSE24	DISTRIBUTED COMPUTING	3	0	0	3

ELECTIVE –III 7TH SEMESTER

BCSE01	DISTRIBUTED OBJECTS	3	0	0	3
BCSE03	TCP/IP DESIGN AND IMPLEMENTATION	3	1	0	4
BCSE05	NETWORK SECURITY & MANAGEMENT	3	1	0	4
BCSE07	NEURAL COMPUTING	3	0	0	3
BCSE09	VLSI	3	1	0	4
BCSE11	DIGITAL IMAGE PROCESSING	3	0	0	3

ELECTIVE IV 7TH SEMESTER

BCSE13	MOBILE AND WIRLELESS NETWORKS	3	0	0	3
BCSE15	PARALLEL PROCESSING	3	0	0	3
BCSE17	BIO-INFORMATICS	3	0	0	3
BCSE19	THEORY OF COMPUTATION	3	0	0	3
BCSE21	NATURAL LANGUAGE PROCESSING	3	0	0	3
BCSE23	VISUAL PROGRAMMING	3	1	0	4
BCSE25	PATTERN RECOGNITION	3	0	0	3

ELECTIVE – V 8TH SEMESTER

BCSE26	E – COMMERCE	3	0	0	3
BCSE28	TOTAL QUALITY MANAGEMENT	3	0	0	3
BCSE30	MAIN FRAME COMPUTING	3	0	0	3
BCSE32	ADVANCED DATABASES	3	0	0	3

BCSE34	ATM NETWORKS	3	0	0	3
BCSE36	CUSTOM COMPUTING	3	0	0	3
BCSE38	SPECIAL ELECTIVE – I	3	0(1)	0	3(1)

ELECTIVE – VI 8TH SEMESTER

BCSE40	FAULT TOLERANT SYSTEMS	3	0	0	3
BCSE42	SOFT COMPUTING	3	0	0	3
BCSE44	ROBOTICS	3	0	0	3
BCSE46	REALTIME SYSTEMS	3	0	0	3
BCSE48	MAN MACHINE INTERFACE	3	0	0	3
BCSE50	MANAGEMENT INFORMATION SYSTEM	3	0	0	3
BCSE52	SPECIAL ELECTIVE – II	3	0(1)	0	3(1)

BMA203	Mathematics – III	3	1	0	4
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Unit I. Laplace Transforms

9 3 0

Transforms of simple functions –properties – Transforms of derivatives and integrals – Initial and Final value theorems – In

verse transforms – Convolution theorem – Periodic functions – Applications - linear ordinary differential equations – Integral Equations.

Unit II. Complex variables

9 3 0

Analytical Functions - Cauchy Riemann equations in Cartesian & Polar Coordinates – Properties of analytical functions – Construction of analytical functions – Conformal mappings – standard types – Bilinear – Christoffel and Joukowski transformation.

Unit III. Complex Integration

9 3 0

Cauchy's integral theorem –integral Formulae – Taylor's and Laurent's series – Residues, Cauchy's residue theorem – Contour Integration around the circle and semi-circular.

Unit IV. Theory Of Sampling And Tests Of Hypothesis

9 3 0

Theory of sampling – Types of sampling – Random – Stratified – Systematic –Test of hypothesis - Large sample – Test of significance – proportion – Difference of proportions – single mean – and variances, small sample – Students 't' test – single mean – Difference of means – Paired 't' test – F's test – Difference of variance, exact. Sample – Chi -square test – Goodness of fit – Independence of attributes.

Unit V. Design of Experiments

9 3 0

Analysis of variance – One way Classification – Two way classification (with one observation per cell) – Two way classification with one and K observations per cell, Design of experiments – Completely Randomized Design (CRD) – Randomized block Design(RBD) - Efficiency of RBD over CRD – Estimation of missing value by RBD – Latin square Design (LSD)

Text Books:

- 1) B.S. Grewal, Higher Engineering Mathematics (35th Edn.)- Khanna Publishers Delhi (2000).
- 2) E. Kreyszig, Advanced Engineering Mathematics (8th Edn.), - John Wiley and Sons (Asia) Print. Ltd., Singapore (2001).

Reference:

- 1) P.Kandaswamy, K.Thilakavathy and K. Gunavathy, Engineering Mathematics Vol I & II S. - Chand & Co Publishers – (1998).
- 2) S. Narayanan, T.K. Manikavachagam Pillai, and G.Ramanaiah, Advanced Mathematics for Engineering Students – Vol I (2nd Edn.).
- 3) M.K.Venkatraman, Engineering Mathematics – III - National Publishing Company, Chennai (2nd Edn.), (2000).

BEC231	ELECTRON DEVICES AND CIRCUITS	3	1	0	4
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Unit I Semiconductor devices

9 3 0

Semiconductor-Materials-PN-Junctiondiode-BJT-FET-VICharacteristics-Rectifiers-Zenerdiode-Voltage regulators

Unit II Amplifiers

9 3 0

Transistor biasing-self biasing-DC and AC analysis of CE, CB and CC. Amplifiers, Current gain, voltage gain-frequency response-power amplifiers

Unit III Feed Back Amplifiers and Oscillators

9 3 0

Negative feedback-Effect-Types-positive feedback-Berkhausen criteria-Oscillators-RC Phase shift-Wein Bridge-Hartley-Collpit's –analysis

Unit 1V Operational Amplifier and Applications

9 3 0

Operational amplifier Ideal characteristics-Applications-Current to voltage, Voltage to current converters, Arithmeticcircuitc-Adder, Subtractor, Multiplier, Differentiator and Integrator. Inverting and Non-inverting amplifiers-Buffer

Unit V Multivibrators and Timers

9 3 0

555 Timer-Block diagram-Monostable-Bistable and Astable, multivibrator using 555

Text Book:

1. Floyd, "Electronic Device"-Pearson Education–6th edition 2003
2. David A. Bell "Electronic Devices and Circuits", Prentice Hall of India

References:

1. Milman and Halkias "Integrated Electronic", TMH, 1985
- 2.Boyle stad Nashelsky, "Electronic Devices and Circuit theory", PHI

BCS201	DATA STRUCTURES AND ALGORITHMS	3	1	0	4
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Unit I Linear Data Structures

9 3 0

Stacks, Queues & Lists Implementation and Applications, Singly linked list-Doubly linked lists.

Unit II Nonlinear Data Structures

9 3 0

Trees – Binary Trees – Binary Search Tree – Tree Traversals – AVL Trees

Unit III Algorithm Analysis

9 3 0

Sorting and searching –space complexity-time complexity-Big Oh-Binary Searching-analysis-Quick sort-Heap sort-Merge sort-Analysis

Unit IV Graph algorithms

9 3 0

Graph operations-DFS-BFS-Minimum cost spanning tree-Krushkal's algorithm-Prim's Algorithm

Unit V Algorithm Design Methods

9 3 0

Greedy method – Shortest path – Divide and Conquer –Matrix multiplication-Dynamic programming-Back tracking –Traveling Sales person problem.

Text Book:

1. E.Horowitz, S.Sahani & S.Rajasekharan, "Computer Algorithms", Galgotia 1999

References:

- 1) Weiss Mark Allen, "Data Structures and Algorithm Analysis in C", Pearson Education, 2/e 1997
- 2) E. Horowitz, S. Sahani & Mehta, "Fundamentals of Data Structures in C++", Galgotia 1999
- 3) SaraBaase & Allen Van Gelder, "Computer Algorithms" Galgotia 2000
- 4) Bhagat Singh, Thomas L. Naps, "Introduction to Data structures" BPB Publications

BCS203	OBJECT ORIENTED PROGRAMMING	3	1	0	4
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Unit I INTRODUCTION

9 3 0

Programming methodologies-Comparison-Object Oriented concepts-Basics of C++ environment.

Unit II CLASSES

9 3 0

Definition-Data members-Function members-Access specifiers-Constructors-Default constructors-Copy constructors-Destructors-Static members-This pointer-Constant members-Free store operators-Control statements

Unit III INHERITANCE AND POLYMORPHISM

9 3 0

Overloading operators-Functions-Friends-Class derivation-Virtual functions-Abstract base classes-Multiple inheritance. Microsoft Foundation Class Libraries

Unit IV TEMPLATES

9 3 0

Class templates-Function templates-Exception handling-Streams.

Unit V JAVA PROGRAMMING

9 3 0

Java environment-Classes-Definition-Fields-Methods-Object creation-Constructors-Overloading methods-Static members-This keyword-Nested classes-Extending classes-Inheritance-member accessibility-Overriding methods-Abstract classes-Interfaces.

Text Books:

1. Stanley B.Lippman, "The C++ Primer" Pearson Education, 3rd edition 2000.
2. H.M.Deitel and P.E.Deitel, "Java How to Program", Pearson Education, 5th edition 2003.

References:

1. Deitel and Deitel, "C++ How to Program" Pearson Education, 4th edition 2000.
2. N.Barkakati, "Object Oriented Programming in C++", Prentice Hall of India Pvt.Ltd, 1997.
3. Ken Arnold and James Gosling, "The Java Programming Language with updated 1.3", Pearson Education 2000.

BMA213	DISCRETE MATHEMATICS	3	1	0	4
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Unit 1 Logic **9 3 0**

Statements – Truth tables – Connectives – Normal forms – Predicate calculus – Inference theory for statement calculus and predicate calculus.

Unit II Combinatorics **9 3 0**

Review of Permutations and combinations – Mathematical Induction – Pigeonhole principle – Principle of inclusion and exclusion – Generating functions – Recurrence relations.

Unit III Groups **9 3 0**

Semigroups – Monoids – Groups – Permutation Groups – Cosets – Lagrange's Theorem – Group homomorphism – Kernel – Rings and Fields (Definitions and Examples only).

Unit IV Lattices **9 3 0**

Partial ordering – Posets – Hasse diagram – Lattices – Properties of lattices – Sub lattices – Special lattice – Boolean algebra.

Unit V Graphs **9 3 0**

Introduction to Graphs – Graph terminology – Representation of Graphs – Graph Isomorphism – Connectivity – Euler and Hamilton paths.

Text Book:

1.S.P. Tremblay & R.Manohar, "Discrete Mathematical Structure with Applications to Computer Science", McGraw Hill Co., 1975, International Edition, 1987.

Sections 1-2.1 to 1-2.4; 1-2.6 to 1-2.14; 1-3.1 to 1-3.5; 1-4.1 to 1-4.3; 1-5.1 to 1-5.5; 1-6.4 to 1-6.5 For Logic, Sections 3-1.1 to 3-2.3

Reference:

1. Alan Doer and Kenneth Levassenr," Applied Discrete Structures for Computer Science", Galgotia Publications (p) Ltd.(1986).

2. Seymour Lipschutz, & Marc Larslipson,"Discrete Mathematics", McGraw Hill Inc., New Delhi(1992)

3. Kolman, Busby & Ross, "Discrete Mathematical Structures for Computer Science", 2nd Edition, Pearson Education (1987)

BEE231	ELECTRICAL ENGINEERING	3	1	0	4
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Unit 1 DC CIRCUITS

9 3 0

Introduction - v-i relationships of circuit parameters – Voltage source and current source - Kirchhoff's laws – Network reduction techniques – Mesh and Node analysis – Superposition theorem – Thevenin's theorem – Norton's Theorem – Maximum power transfer theorem.

Unit II AC CIRCUITS

9 3 0

RMS and average values of periodic waves – form factor – phase and phase difference – RL, RC, RLC circuits – Parallel circuits – power and power factor – Introduction to three phase system – solution of balanced three phase circuits – power measurement of 3-phase system.

Unit III DC MACHINES

9 3 0

Construction details of DC machines – principle of operation of DC generator – EMF equation – Characteristics of DC generators – Principle of DC motor – Back EMF – Torque equation – Characteristics shunt, series and compound motors - Losses and efficiency – Starters – Speed control – applications.

Unit IV TRANSFORMERS

9 3 0

Principle of ideal transformer – constructional details – EMF equation – Equivalent circuit – Voltage regulation – losses and efficiency – OC and SC tests on transformer – Autotransformer – Power supplies - basic principle of SMPS and UPS.

Unit V SYNCHRONOUS MACHINES AND INDUCTION MOTORS

9 3 0

Construction details – principle of alternator – EMF equation – Voltage regulation – EMF method - Starting of synchronous motor – effect of field excitation – V-curves.
Induction motor – principle of operation – torque equation – torque-slip characteristics – Starting methods and speed control – applications

Text Books:

1. S.K Bhattacharya, "Electrical Machines", Tata Mc Graw Hill Publications.
2. Sudhakar & Shyammoan "Circuits & Networks Analysis & Synthesis"
Tata McGraw – Hill, 2001.

Reference Books:

1. J.A.Edminister, "Theory And Problems On Electric Circuits" Mc Graw Hill Publications, 1994.
2. I.J. Nagrath & D.P. Kothari, "Electrical Machines", TMH Publications.
1. "Hughes Electrical Technology", Revised by I McKenzie Smith, Low price Edition, Pearson Education, Seventh edition.

BCS221	DATA STRUCTURE USING C++	0	0	3	1
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1. Implementation Of Stack using arrays and pointers
2. Implementation Of Queue using arrays and pointers
3. Implementation of Circular Queue (Using Arrays)
4. Single Linked List
5. Circular Linked List
6. Doubly Linked List
7. Evaluation Of Expressions
8. Binary Tree Implementations And Traversals
9. Binary Search Trees
10. Quick Sort And Heap Sort

BEC241	ELECTRON DEVICES AND CIRCUITS LAB	0	0	3	1
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1. PN junction diode-VI characteristics
2. Zener Diode -Regulator
3. Rectifiers-HWR FWR
4. I/P & O/P of characteristics CE
5. RC coupled amplifier frequency response with and without feedback
6. Operational Amplifier-Applications
 - Adder
 - Subtractor
 - Inverting amplifier
 - Non-inverting amplifier
 - Buffer
 - Integrator
7. Wein Bridge Oscillator
8. Astable Multivibrator using 555 timer

SEMESTER IV

BMA202	MATHEMATICS – IV	3	1	0	4
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Unit 1 Fourier series

9 3 0

Dirichlet's conditions – General Fourier series – Half range Sine and Cosine series - Parseval's identity – Complex form of Fourier series – Harmonic analysis.

Unit II Fourier Transforms

9 3 0

Statement of Fourier integral theorem – Fourier transform pairs – Fourier Sine and Cosine transforms – Properties – Transforms of simple functions – Convolution theorem – Parseval's Identity.

Unit III Partial Differential Equations

9 3 0

Formation – Solutions of standard types of first order equations – Lagrange's equation – Linear partial differential equations of second and higher order with constant co-efficients.

Unit 1V One Dimensional Wave Equation and Heat Equation

9 3 0

Classification of Second order partial differential equations – Transverse vibration of string – One-dimensional heat equation – Fourier series solutions.

Unit V Two Dimensional Heat Equations

9 3 0

Steady state heat flow in two dimensions - Laplace equation in Cartesian and polar forms- Fourier series solutions.

Text Book:

- 1) P.Kandaswamy, K.Thilakavathy and K. Gunavathy, Engineering Mathematics Vol II & III (4th Revised Edn.) -S. Chand & Co Publishers – (1998).
- 2) B.S. Grewal, Higher Engineering Mathematics (35th Edn.)- Khanna Publishers Delhi (2000).

Reference:

- 1) E. Kreyszig: Advanced Engineering Mathematics (8th Edn.) - John Wiley and Sons (Asia) Pvt. Ltd., Singapore (2001)
- 2) S. Narayanan, T.K. Manikavachagam Pillai, and G. Ramanaiah– Advanced Mathematics for Engineering students – Vol II & III (2nd Edn.) S. Viswanathan (Printers and publishers) (1992).
- 3) M.K. Venkatraman, Engineering Mathematics - Volume III – A & B National publishing company, Chennai (13th Edn.), (1998).

BEC234	DIGITAL ELECTRONICS	3	0	0	3
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Unit I_ Number systems

9 0 0

Review of binary, octal and hexadecimal number systems – conversions; Binary Arithmetic – signed magnitude form – 1's, 2's complement representation. Codes: - BCD, | Ex-3|, Grey codes, ASCII Codes, Error detecting codes (Hamming code)

Unit II Boolean Algebra

9 0 0

Boolean algebra – De Morgan's law - Simplifications of Boolean expression – Sum of products and product of sums – Karnaugh Map – Quine McClusky method of simplification (Including Don't care conditions)

Unit III1 Combinational logic

9 0 0

Logic gates – AND, OR, NOT, NOR, NAND and EX-OR – combinational logic- Arithmetic circuits – Half adder – Full adder, Half Subtractor - Decimal Adder – Excess 3 adder – Code converters – Multiplexer – Demultiplexer- Encoder – decoder – Design of any general combinational logic circuit.

Unit IV Sequential logic design

9 0 0

Building blocks of sequential logic-RS, JK, Master-Slave, D and T flip-flop, Asynchronous and synchronous counters - Binary and BCD counters - Shift registers – Basic models of sequential machines – concept of state diagram – state table – state reduction – Design and implementation of synchronous sequential circuits

Unit V Logic families

9 0 0

Characteristics of RTL, DTL, TTL, families – Schottky, clamped TTL, ECL, IIL – Mos Inverters – complementary Mos inverters

Text Books:

1. MORIS MANO: Digital Logic & Computer Design, Pearson Education, 2nd edition 2001
2. Fundamentals of Logic Design – IVth edition – Charles H.Roth, Jr. – Jaico Publications.

Reference:

1. FLOYD: Digital Fundamentals, Universal Book Stall, New Delhi.1993
2. ALBERT PAUL, MALVINO AND DONALD P LEACH: Digital principles and Applications. Mc Graw Hill publications, 2003.
3. Ronald J. TOCCI: "Digital Systems Principles and Applications" 6th edition, PHI, 1997.

BCS202	DATABASE MANAGEMENT SYSTEM	3	1	0	4
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Unit 1 Introduction:

9 3 0

Definition -Need for a DBMS-Uses of DBMS- Advantages and disadvantages of DBMS
Database and database users- view of data –Architecture-data models-data dictionary –database languages

Unit II Relational approach

9 3 0

Relational model-Structure of a relational database-Relational algebra- Tuple relational calculus-
Domain relational calculus-SQL-Embedded SQL-Query languages

Unit III Relational database design

9 3 0

Relational database design-Integrity constraint-Pitfalls and design –Functional dependency-
Normalization-Entity relationship model-Storage and file structure-Indexing and hashing-Basic
concepts-B⁺ tree index file-B tree index file-Static hashing –Dynamic hashing

Unit IV Object Oriented Relational Database Technology

9 3 0

Concepts for Object oriented data model – Object oriented database Languages -Persistent
programming language-Object relational Databases.

System Implementation techniques:

Query processing-Transaction processing-Concurrency control-Recovery system

Unit V Enhanced Data models for advanced applications

9 3 0

Database system architecture- Client server system-centralized systems—parallel systems-Distributed
system-distributed databases.

Textbook:

1. Abraham Silberschatz, Henry F.korth, S.Sudharshan, “Database system concepts” 4th Edition, Tata
McGraw-Hill, 1997

References:

1. Ramez Elmasri, Shamkant B.Navathe, “Fundamentals of database systems”, 4th edition Pearson
Education-2002
2. C.J.Date, “An Introduction to Database systems”, 7th Edition, Pearson Education,1997.
2. Raghu Ramakrishnan, “Database Management Systems”, WCB McGraw Hill, 1998.
3. Bipin C.Desai, “An Introduction to Database Systems”, Galgotia publications, 2001

BEC232	BASIC PRINCIPLES OF COMMUNICATION	3	0	0	3
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UNIT – I

9 0 0

Signals – Type – analog, digital – Spectrum – telecommunication services – Transmission path – Noise in communication system – Internal – External – Noise Figure

UNIT – II

9 0 0

Modulation Systems – Basic principles – Amplitude Modulation – Concept – Power & Band Width consideration – frequency modulation - Principle – Power & Band Width consideration – Noise in AM & FM – Phase Modulation

UNIT – III

9 0 0

Radio communication – AM Transmitters Receiver – FM Transmitter – Receiver – Performance measurement

UNIT – IV

9 0 0

Digital communication Advantages – basic block diagram – sampling Theorem – Quantization – PCM – DPCM – Delta modulation – ADM – Applications.

UNIT – V

9 0 0

Error control coding – Relational, types – Linear block Codes – Cyclic codes – memory codes – simple problems.

TEXT

1. Anokh Singh “Principles of Communication”, S.Chand & Co. 2002.
2. Sanjay Sharma “Analog communication systems” Karthic & Sons, 2002.
3. Simon Haykins, “Principles of Communication”, PHI, 1990.

REFERENCE

1. B.P. Lathi, “Analog and Digital Communication Systems”, PHI, 1992.
2. Taub & Schilling, “Principles of Communication”, Tata McGraw Hill Publications, 1990.
3. A.B. Carlson, “Communication Systems”, McGraw Hill, 1992.

BCS204	ARTIFICIAL INTELLIGENCE	3	1	0	4
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Unit 1 Introduction

9 3 0

Introduction to artificial intelligence-foundations of AI-history of AI-agents and environments-Structure of intelligent agents

Unit II Problem solving

9 3 0

Problem solving by searching-problem solving agent-example problems-searching for solutions-informed search strategies-Best first search-heuristic functions-memory bounded search iterative improvement algorithms- game playing –introduction-perfect decision in two person games-imperfect decisions-alpha –beta pruning-back tracking

Unit III Knowledge Representation

9 3 0

Knowledge and reasoning-logical agents-the Wumpus problem-logic –prepositional logic-reasoning patterns-prepositional inference-agent based on prepositional logic-first order logic-syntax and semantics-using first order logic-knowledge engineering in first order logic-inference in first order logic-forward chaining-backward chaining-resolution

Unit IV Planning

9 3 0

Planning-the planning problem-planning with state space search-partial order planning-planning and acting –simple re-planning agent-fully integrated planning and execution

Unit V Reasoning with incomplete and uncertain knowledge

9 3 0

Uncertain knowledge and reasoning--acting under uncertainty-basic probability notations-the axioms of probability-inference using full joint distribution-Bayes rule-probabilistic reasoning-knowledge in uncertain domain-Bayesian networks-inference in Bayesian networks-making simple decisions-making complex decisions

Textbook:

1. Stuart Russel, Peter Norving,"Artificial Intelligence A modern Approach", Pearson education, 2nd edition 2004.

Reference:

1. Patrick Henry Winston, "Artificial Intelligence", 3rd Edition, ISE Reprint, Pearson Education, 1999.
2. Elaine Rich, Kevin Knight,"Artificial Intelligence", TMH, 1993.
3. Eugene Charniak, Drew MC Dermott, "Introduction to Artificial Intelligence", ISE Print, Pearson Education, 1998.
4. Nels J. Nelsson, "Artificial Intelligence – A new Synthesis", Harcourt Asia, Morgan Kaufmann, 1988.

BCS206	COMPUTER GRAPHICS AND MULTIMEDIA	3	1	0	4
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Unit I Introduction

9 3 0

Overview of graphics system-Video display devices-Raster scan system-Random scan system-Graphics monitor and workstation –Input devices-Hard copied devices-Graphic software-Output primitives-Line drawing algorithms-Loading the frame buffer-Line function-Circle generation-Ellipse generation-curves-Filled area primitives.

Unit II Transformation

9 3 0

Attributes of output primitives-Line attributes-Curve attributes-Color and gray scale levels-Area fill attributes-Character attributes-Bundled attributes-Inquiry functions-Antialiasing-Two dimensional transformation-Basic transformation-Matrix representations-Composite transformations-Other transformations-Affine transformation-Raster method for transformation.

Unit III Clipping & Windowing

9 3 0

Viewing pipeline-Coordinate reference frame-Window to view port transformation-Two dimensional viewing functions-Clipping operations-Point clipping-Line clipping-Polygon clipping-Curve clipping-Text clipping-Exterior clipping.

Unit IV Three Dimensional Concept

9 3 0

Three dimensional display methods-Parallel projection-Perspective projection-Depth cueing-Visible line surface identification-Surface rendering-Exploded and cut away views-Three dimensional and stereoscopic views-Three dimensional graphics package.

Unit V Multimedia System

9 3 0

Introduction- Multimedia applications-Multimedia system architecture-Objects for multimedia systems. Compression and decompression-Types of compression-Binary image compression schemes-JPEG/MPEG

Textbook:

1. Donald Hearn, M.Pauline Baker, “Computer graphics”, 2nd edition, Pearson Education, 1997.
2. Koegel Buford JFK, Multimedia Systems, , Pearson Education,1999
3. **Introduction to Computer Graphics, Anirban mukhopadhyay.**

Reference:

1. Foley J.D., Van Dam A, Fiener S.K. and Hughes J.F., “Computer Graphics”, 2nd edition, Pearson Education, 1996.
2. Anirban Mukhopadhyay, Arup Chattopadhyay, “Introduction to Computer Graphics”, Vikas Publication House, 2003
3. Zhigang Xiang, Roy Plastock, “Computer Graphics”, 2nd Edition, McGraw Hill, 2001.

PRACTICALS

BCS222	DBMS LAB	0	0	3	1
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I Program to learn DDL and DML commands

1. Creating a database, simple queries
2. Use of select statements for queries
 - A. AND, OR, NOT operations
 - B. Union intersection and join operations
3. Sorting and grouping
4. Nested queries using SQL
5. Built in functions in SQL
6. Update operations using SQL.
7. Use of index, creating views and querying in views

II Program to learn PL/SQL

- a. To create a cursor and work on that.
- b. To create PL/SQL code for Exception.
- c. To create PL/SQL code using control statement.
- d. To create PL/SQL code using sub programs.

III Visual Basic

Program to develop an application for

- a. Pay-roll processing
- b. Student evaluation system.
- c. Computerized quiz
- d. Income tax calculation
- e. Election processing system.

BEC244	DIGITAL ELECTRONICS LAB	0	0	3	1
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1. Verification of Truth tables of Logic Gates
2. Characteristics of digital Logic families
3. Implementation of Boolean function
4. Adders / Subtractors
5. Multiplexers / Demultiplexers
6. Encoder / Decoders
7. Implementation of any general combinational logic circuit
8. Study of Flip – Flops
9. Study of Registers
10. Study of Counters
11. Implementation of any general sequential logic circuits
12. A to D Converters

BCS224	INPLANT TRAINING	0	0	3	1
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Students are directed to attend training in a company and should submit a report at the beginning of V semester.

FIFTH SEMESTER

BCS301	SYSTEM SOFTWARE	3	1	0	4
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Unit 1 INTRODUCTION 9 3 0

Basic concepts-Machine structure- Instruction formats – Addressing modes – Typical Architectures.

Unit II ASSEMBLERS 9 3 0

Functions – features – Machine dependent – Machine independent, Design options – One Pass – Multipass – Implementation – Examples.

Unit III LOADERS and LINKERS 9 3 0

Functions – Features – Relocation – Program Linking – Linking Loader Implementation Automatic library search – Loader option – Linkage editors – Dynamic linking – Bootstrap loaders – Examples.

Unit IV MACROPROCESSORS 9 3 0

Functions – Macro parameters – Using labels – conditional macro expansion – Recursive Macro expansion – General purpose macro processors – Examples.

Unit V COMPILERS and UTILITIES 9 3 0

Introduction to Compilers – Different phases of a compiler – Simple One pass Compiler, Code optimization techniques, System software tools, Implementation of editors – Debuggers.

Text Book:

1. L. Beck. “System Software, an Introduction to System Programming”, Addison Wesley 1999

Reference:

1. D. M. Dhamdhere. “Systems Programming and Operating Systems”. Tata McGraw Hill Company 1999.
- 2 . A.V. Aho, Ravi Sethi and J.D. Ullman. “Compilers Principles, Techniques and Tools”, Addison Wesley 1988.

BCS303	COMPUTER ARCHITECTURE	3	1	0	4
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Unit 1 INTRODUCTION

9 3 0

Basic structure of Computer Hardware-Von-Neumann Architecture-Functional units-Instruction formats and types-Addressing modes.

Unit II ARITHMETIC AND LOGIC UNIT

9 3 0

Fixed point arithmetic operation-addition, subtraction, multiplication, division-Floating point arithmetic operation-Design of ALU-Bit-slice processors.

Unit III PROCESSOR UNIT

9 3 0

Data path implementation-Control unit-hardwired control, micro programmed control, nanoprogramming- Concepts of pipelining.

Unit IV MEMORY SYSTEM

9 3 0

Memory hierarchy-Internal organization of RAM, ROM, Interleaved memory-Cache and associative memories-Virtual memory.

Unit V INPUT/OUTPUT AND PERIPHERALS

9 3 0

Basic concepts-programmed I/O-Interrupts and DMA-I/O processors-input devices-display devices-printers magnetic disk drives-optical drives.

Text Books:

1. .Hayes," Computer Architecture and Organization",Tata McGraw Hill,1998.

References:

1. Heuring V.P., Jordan H.F., "Computer System Design and Architecture", Addison Wesley, 1999.
2. Patterson and Hennessey,"Computer Organization and Design". The Hardware/Software Interface, Harcourt Asia Morgan Kaufmann, 1999.
3. Carl Hamacher V., Zvonko G.Vranesic, Safwat G. Zaky, "Computer organization", Tata McGraw Hill, Latest Edition.
4. Morris Mano,"Computer System Architecture", PHI- 3rd Edition, 2000

BCS305	ADVANCED JAVA PROGRAMMING	3	0	0	3
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UNIT I JAVA BASICS REVIEW

9 0 0

Java Streaming – Components and Events Handling – Threading Concepts – Networking Features – Byte Code Interpretation – Media Techniques.

UNIT II ADVANCED NETWORKING AND BEANS

9 0 0

Client-Server computing – Sockets – Content Protocols – Handlers - Developing Distributed Applications – RMI – Remote Objects – Object Serialization – Bean Concepts – Events in Bean Box – Bean customization and persistence.

UNIT III JAVA DATABASE PROGRAMMING

9 0 0

Connecting to Databases – JDBC principles – Databases access – Interacting – Database Search – Accessing Multimedia Databases – Database Support in Web applications.

UNIT IV WEB BASED JAVA

9 0 0

Servlets, EJB.JBuilder, JNI, Struts

UNIT V RELATED JAVA TECHNIQUES

9 0 0

3D Graphics – JAR File Format and Creation – Internationalization – AWT/Swing Programming – Advanced Java Scripting Techniques.

Text books:

1. Jame Jaworski “Java Unleashed”, SAMS Tech media Publications, 1999

Reference Books:

1. Campione, Walrath and Huml “The Java Tutorial”, Addison Wesley 1999.
2. Duane A .Bailey,”Java Structures”, McGraw-Hill publications 1999.
3. Jeff Frentzen and Sobotka, “Java Script”, Tata McGraw Hill 1999.

BCS307	OPERATING SYSTEM	3	0	0	3
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Unit 1_Introduction: **9 0 0**

Mainframe systems – Desktop systems – Multiprocessor systems - Distributed systems – Cluster Systems – Real time systems-Hardware Protection-System Components-Handheld Systems-Operating System Services-System Calls-System Programs-System Structure-Visual Machines-System Design and Implementation.

Unit II Process Management: **9 0 0**

Process concept-Process Scheduling-Operation on Process-Cooperating Processes- InterProcess Communication-Threads-Overview-Multithreading Models. CPU Scheduling-Basic Concepts-Scheduling Criteria-Scheduling Algorithms-Multiple-Processor Scheduling-Real Time Scheduling-Algorithm Evaluation

Unit 1II Synchronization and Deadlocks: **9 0 0**

Process Synchronization-The Critical Section Problem-Synchronization Hardware-Semaphores-Classical Problems Of Synchronization-Deadlocks-System Model-Deadlock Characterization-Methods Of Handling Deadlocks-Deadlock Prevention-Deadlock Avoidance-Deadlock Detection-Recovery form Deadlock.

Unit 1V Memory Management: **9 0 0**

Background-Swapping-Contiguous Memory Allocation - Virtual Memory – Address Translation – Paging – Segmentation – Segmentation with Paging. - Static Paging Algorithm – Dynamic Paging Algorithm

Unit V Files and Secondary storage Management: **9 0 0**

File Systems – File Concepts – Access Methods – Directory Structure – File System Mounting – File Sharing – Protection – File System Structure – File System Implementation – Recovery – Disk Structure – Disk Scheduling – Disk Management

Text Book:

1. Silberschatz, Galvin, GAGNE “Operating System Concepts” 6th Edition John Wiley & Sons INC, 2002

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Reference:

1. D.M.Dhamdhare, “Operating Systems”, Tata McGraw Hill, 2002
2. Charles Crowley, “Operating Systems: A Design Oriented Approach”, Tata McGraw Hill 1999.
3. Andrew S. Tanenbaum, “Modern Operating Systems”, Prentice Hall of India, 1995.
4. William Stallings, “Operating Systems”, Prentice Hall of India, 1997.

BCS309	SOFTWARE ENGINEERING	3	0	0	3
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Unit I

9 0 0

Introduction – Computer Based System Engineering – Emergent System Properties – Systems and their environment – System modeling – The system engineering process – System procurement - **Software Process** – Software Process Models – Process iteration – Software specification – Software design and implementation – Software validation – Software evolution – Automated process support – **Project Management** – Management activities - Project planning – Project scheduling – Risk Management.

Unit II

9 0 0

Software Requirements – Functional and non-functional requirements – User requirements – System requirements – The software requirements document – **Requirements engineering Processes** – Feasibility studies – Requirements elicitation and analysis – Requirements validation – Requirements management – **System Models** – Context models – Behavioral models – Data models – Object Models – CASE Workbenches – **Software Prototyping** – Prototyping in the software process – Rapid prototyping technique – User Interface Prototyping – **Formal specification** – Formal specification in the software process – Interface specification – Behavioral specification

Unit III

9 0 0

Architectural Design – System structuring – Control models – Modular decomposition – domain Specific architectures – **Distributed systems architectures** – Multiprocessor architectures – Client-Server Architectures – Distributed object architectures – CORBA – **Object-Oriented Design** – Objects and object classes – Design Evolution – **Real-time Software design** – System design, Real-time executives –Monitoring and control systems – Data acquisition systems – **Design with reuse** – Component-based development – Application families – Design patterns – **User Interface Design** – Principles – User Interaction – Information Presentation – User Support – Interface Evaluation

Unit-IV

9 0 0

Dependability – **Critical systems** – Availability and Reliability – Safety – Security – **Critical System Specification** – Software Reliability Specification – Safety Specification – Security Specification – **Critical System Development** – Fault Minimization – Fault Tolerance – Fault Tolerant Architectures – Safe System Design

Unit V

9 0 0

Verification and Validation – Planning – Software inspections – Automated static analysis – Clean room Software Development – **Software Testing** – Defect Testing – Integration Testing – Object Oriented Testing – Testing Work benches – **Critical Systems validation** – Formal methods and Critical Systems - Reliability validations – Safety Assurance – Security Assessments

TEXT BOOK

1. Sommerville I., “Software Engineering”, 6th edition, Addison Wesley, 2000.

REFERENCES

1. Fairley, “Software Engineering Concepts”, McGraw-Hill, 1985.
2. Roger S. Pressman, ‘Software Engineering: A Practitioner Approach’, 6th edition, McGraw-Hill, 2005
3. David Gustafson, “Software Engineering”, Schaum’s outlines, Tata McGraw-Hill, 2003.

BEC333	MICROPROCESSOR AND APPLICATIONS	3	1	0	4
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Unit 1

9 3 0

Internal Architecture of 8085 microprocessor – Instruction set – Addressing Modes – 8085 interrupts – Timing diagram – Debugging Techniques – Assembly level's programming

Unit II

9 3 0

(8251) USART – Programmable Interval Timer (8253/8254) programmable Peripheral interface (8255) – CRT controller (8275 / 6845) – Floppy disk Controller (8272)

Unit III

9 3 0

Programmable DMA controller (8257)- Programmable Interrupt controller (8259)-Keyboard display Interface (8279) – ADC / DAC interfacing.

Unit IV

9 3 0

8086 Architecture and pin configuration – Minimum mode and maximum mode configuration - Addressing modes – Basic Instruction – 8086 Interrupts – assembly level's Programming – Introduction to 80186, 80286, 80386 and Pentium processor

Unit V

9 3 0

Typical Application of 8085 – Stepper Motor controls – Traffic light controls – waveform generation – Analog interfacing and industrial control – Microcomputer based system with seven segment displays and key switches

Text Books:

1. Ramesh S.Gaonkar, Microprocessor Architecture Programming and Applications with 8085. Fourth edition, Penram International publishing 2000.(Units I,II,III & V)
2. Douglas V. Hall, Microprocessor and Interfacing, programming and Hardware, Tata McGraw Hill, Second Edition 1999.(Unit III)

References:

1. Yu_Cheng Liu Glenn A. Gibson, Microcomputer systems the 8086 / 8088 family, Prentice Hall 2001.
2. Kenneth J.Ayala the 8086 Microprocessor, Programming and Interfacing the PC, Penram International Publishing, 1995.
3. A.K.RAY&K.M.BHUCHANDI, Advanced Microprocessor and Peripherals, Architecture, Programming & Interfacing, -TMH, 2000

BCS321	OPERATING SYSTEMS LABORATORY	0	0	3	1
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1. Basic UNIX Commands
2. Shell Programming (such as database accessing)
 - Shell program 1
 - Shell program 2
 - Shell program 3
 - Shell program 4
 - Shell program 5
3. Process Management-Fork-Exec
4. Implementation of some Scheduling Algorithms
5. Message Queues, Pipe and FIFO's
6. Signals
7. Shared Memory and Semaphores
8. Implementation of Best Fit & Worst Fit file allocation Strategies
9. Implement the solution of Dining Philosopher's Problem
10. File Systems

BEC341	MICROPROCESSOR LAB	0	0	3	1
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8085/8086 Microprocessor: -

1. Assembly language Programming for single byte, multibyte, addition and subtraction, multiplication and division
2. Searching and sorting
3. Square and square root
4. Block Movement of Data

Interfacing: -

5. Wave form generation using 8255 PPI
6. Traffic light controller
7. Stepper Motor Controller
8. Keyboard Interfacing
9. Matrix display

PERIPHERALS LAB

1. 7-segment LED Display Routine.
2. Printer Interface.
3. Serial data transfer using COM port.
4. Data Acquisition System.
5. Floppy Disk Drive, Hard Disk Drive Mechanism

SEMESTER 6

BCS302	COMPUTER NETWORKS	3	0	0	3
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Unit 1 Introduction

9 0 0

The uses of computer networks - Network hardware - Network software - Reference model
Example of networks- Network standardization.

The physical layer: The theoretical basis for data communication - Guided Transmission media -
Wireless transmission - Mobile telephone - Communication satellite.

Unit II Data Link Layer:

9 0 0

Data link layer design issues - Error detection and correction - Elementary data link protocols -
Sliding window protocols - Example of data link protocols- ETHERNET - 802.11, 802.16, Bluetooth.

Unit 1III Network layer

9 0 0

Network layer design issues - Routing algorithms - Congestion control algorithms - Internetworking-
Network layer in Internet.

Unit 1V Transport layer

9 0 0

Transport layer design issues - Transport protocols - Simple transport protocol - Internet
transport protocols UDP, TCP.

Unit V Application layer

9 0 0

Domain name system - Electronic mail - World Wide Web - Multimedia - Cryptography, Digital
signature- Communication Security.

TEXT BOOK:

1. Andrew S. Tanenbaum, "Computer networks ", PHI, 4th edition 2002.

REFERENCES:

1. William Stallings," Data and computer communications", PHI, 2001
2. Douglas E. Comer," Internetworking with TCP/IP-Volume-I", PHI, 1997
3. Godbole, "Data communication and networking", TMH, 2004.
4. Forouzan B. A., "Data Communications and networking", TMH, 2003.

BCS304	PRINCIPLES OF COMPILER DESIGN	3	0	0	3
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Unit 1

9 0 0

Phases of a Compiler-Computer Language Representation—Compiler Construction Tools—Token Specification

Unit II

9 0 0

Recognition Machine - Error Recovery - A Typical Lexical Analyzer Generator -Parsing – Top-down Parsing – Principles

Unit III

9 0 0

Top-down Parsing Implementation – Bottom-up Parsing – LR Parsers – Implementation – Error Recovery – Parser Generator

Unit IV

9 0 0

Intermediate Languages – Declarations – Flow Control Statements – Procedure Calls – Symbol Table

Unit V

9 0 0

Introduction to Code Optimization – Code Generation – Issues in design of Code Generator – Run Time Storage Management – Approaches to Compiler Development

TEXT BOOK

1. Alfred V.Aho Ravi Sethi, Jefferey D.Ullman, “Compiler Principles, Techniques and Tools”, Addison-Wesley –1988.

REFERENCE BOOK:

1. Hunter, “The Essence of Compilers”, Pearson Education, 2002.
2. Allen Holub I., “Compiler Design in C”, PHI, 2000.

Software Required: C/C++/VC++/JDK1.3/JSDK

BCS306	WEB TECHNOLOGY	3	0	0	3
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UNIT I INTRODUCTION TO HTML

9 0 0

Introduction to HTML, web publishing - Process of web publishing, Implementation, Phases of website development, HTML'S Role in the web, Issues facing HTML documents, Documents types, HTML Elements.

Links & Addressing: Links, Basics, URL Concepts, Links in HTML, Anchor attributes, Images & anchors, Image maps, <links> & <META> tags, HTML & images.

Presentation & Layouts: Layout with tables, Frames, Layers, HTML & other media types -HTML & binary objects, <MARQUEE> tag, Audio support in browser, Video support, Style sheet basics, Style sheet properties, Positions with style sheet, CSS2.

Programming & HMTL: HTML forms basics, <FORM> element, Form controls, Server side programmed, Counter gateway interface, Cold fusion,

UNIT II Site Delivery & XML:

9 0 0

Delivering the website, Virtual hosting, Running a local web server Working of web server, Relationship any HTML, SGML & XML, Basic XML, Ways to use XML, Rewriting HTML as XML, Future of XML

UNIT III

9 0 0

Java script/VB Script, Active server pages, Purpose of scripts, Scripts in an HMTL document, Script events & HTML, Client side programming & HTML, JSP

UNIT IV

9 0 0

Web Server (Tomcat) and Servlet

UNIT V

9 0 0

A small website application which has to retrieve the data from a database and displays it

TEXT BOOK:

1. THOMAS A.POWELL, The Complete Reference HTML, 2nd Edition - Tata McGraw Hill,

BEC304	DIGITAL SIGNAL PROCESSING	3	1	0	4
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Unit I SIGNALS & SYSTEMS

9 3 0

Signal classifications – Signal Representation – Classification of Discrete time signals – Typical Discrete time signals – operation on signals – Discrete time system – Classification of Discrete time systems – solution of difference Equations.

Unit II Z TRANSFORM & REALISATIONS

9 3 0

Z Transform – Properties – System function – Inverse Z Transform – Realisation of Digital filters – Direct Form-I, Direct Form-II, Transposed, parallel, cascade, Lattice- Ladder structure.

Unit III DFT & FFT

9 3 0

Discrete Fourier Transform (DFT) – Definition – Properties – Convolution of sequences – Linear convolution - circular convolution.

Introduction to Radix – 2FFT – Properties – DIT (FFT) – DIF (FFT) – Algorithms of Radix – 2FFT – Computing Inverse DFT by doing a direct DFT

Unit IV DESIGN OF DIGITAL FILTER

9 3 0

Review of design techniques for analog low pass filters –Frequency transformation – Properties of IIR filter design – Characteristics of FIR filters with linear phase - Fourier series Method – frequency sampling Method – Design of FIR filters using windows.

Unit V EFFECTS OF FINITE REGISTER LENGTH

9 3 0

Fixed Point & Binary floating Point Number Representation – Quantization Effects due to truncation &Rounding – finite word length effect in digital filters.

TEXT

1. Sanjit K.Mitra ‘Digital Signal Processing’, A computer Based Approach, Tata McGraw Hill, New Delhi, 1998.
2. Johnny R.Johnson, Introduction to ‘Digital Signal Processing’ Minth Printing, September 2001.

REFERENCE:

1. John G.Proakis and Dimitris G.Manolakis, “Digital Signal Processing, Algorithms and Applications”, PHI of India Ltd, New Delhi 3rd Edition 2000.

BCS322	NETWORK PROGRAMMING LAB	0	0	3	1
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1. Write a socket program for Echo/Ping/Talk commands.
2. Create a Socket (TCP) between two computers and enable file transfer between them.
3. Write a program to implement remote command execution (two m/c's can be used).
4. Create a socket (UDP).
5. Write a port simulating ARP/RARP.
6. Create a socket for HTTP for web page upload and download.
7. Write a program for file transfer in Client-Server architecture using following methods
 - a) Using RS232C
 - b) Using TCP/IP
8. Write a program to implement RMI (Remote Method Invocation)
9. Perform a case study about different routing algorithms to select the network path with its optimum and economical during data transfer
 - a) Shortest path routing
 - b) Flooding
 - c) Broadcast /Multicast routing.

BCS324	SYSTEM SOFTWARE AND COMPILER DESIGN LAB	0	0	3	1
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SYSTEM SOFTWARE:

1. Symbol Tables
2. Assemblers
3. Loaders
4. Linkers
5. Macroprocessors

COMPILER DESIGN:

1. Write a program for constructing NFA from a regular expression
2. Write a program for constructing DFA from a regular expression
3. Write a program for constructing top down parsing table.
4. Write a program to implement Shift-reduce parsing algorithm.
5. Write a program to implement Operator-Precedence parsing algorithm.
6. Write a program for constructing LR-Parsing table..
7. Write a program to generate a code for a given intermediate code.

Software Required: C/C++

BCS326	APPLICATION PROJECT	0	0	3	1
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During the 6th semester vacation holidays student has to do an application project either for the department or for other departments or for the industry

Application project using Advanced Java-Three tier application project

SEMESTER VII

BCS401	SOFTWARE QUALITY AND TESTING	3	1	0	4
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Unit-I Software Quality 9 3 0

Views of quality-hierarchical modeling-Boehm and McCall's models-quality criteria-interrelation-measuring quality-quality metrics-overall measure of quality
Developments in measuring quality: Gilb approach-quality profiles-Management of quality-tools for quality-quality standards

Unit-II Quality Management System 9 3 0

Historical perspective -elements of QMS-Human Quality Culture- QMS for software -Quality Assurance- ISO9000-3-ISO9000 series a generic quality management standard- Impact of ISO9000 and Tick IT-Models and Standards for Process Improvement: CMM-Levels of CMM-Role of CMM-SPICE

Unit –III Software Testing 9 3 0

Role of software testing –Testing Defect- Testing Strategy: SDLC- A structural approach to testing – Test Strategy-Testing methodology: Verification and Validation-Functional and Structural Testing-Developing Testing Methodologies.

Unit-IV Software Testing Methods and Installation 9 3 0

Software Testing Techniques-Selecting and Installing Software Testing Tools–Testing RAD-Testing Security-Creating Test Documentation-Testing System Documentation

Unit-V Software Testing Strategies 9 3 0

Software Testing Process-Overview-Project Management Development Estimate and Status - Developing Test Plan-Requirement Phase Testing-Design Phase Testing-Program phase Testing-Execute Test and Record Results-Acceptance Test-Report Test results – Testing Software Installation-Testing Software Changes – Test Effectiveness Evaluation – Test Measurement Process – Test Metrics.

Text Book:

1. Alan Gillies: “Software quality: Theory and Management”, International Thompson, Computer press 1997
2. William Perry, “Effective Methods for Software Testing”, John Wiley & Sons, USA, 1995.

Reference Books:

1. Ron Patton, “Software Testing”, Techmedia.1995
2. StephenH.Khan,”Metrics and models in software quality engg”, Addison –Wesley 1995

BCS403	.NET FRAMEWORK	3	1	0	4
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UNIT 1

9 3 0

.NET platform, .NET Framework, Common Language Runtime, Namespace, assemblies, .NET memory management Introduction to C#.net, Introduction to VB.NET

UNIT II C#.NET

9 3 0

Introduction to c#, Understanding C# in .NET, Overview of c#, literals, Variables, Data Types. Operators, Expressions, Branching and Looping Operations- Methods, Arrays Strings. Structures and Enumerations – Classes and Objects- inheritance and Polymorphism, Multiple Inheritance. Operator Overloading, Events, Console I/O Operations and Exception.

UNIT III VB.NET

9 3 0

Introduction, Windows application, Web application, Building Blocks, programming Fundamentals, Creation of Windows Forms, SDI Vs MDI, Creating run time Windows Controls. File handling, Interaction with other Applications. Creating and using reports. Debugging and Packaging.

UNIT IV ADO.NET

9 3 0

ADO.NET, Connected Objects, Disconnected Objects, Data Form Wizard, Data Bound Form, Various Connection Methodologies for Database, Querying database, usage of Data Adapter class. Working with data off-line, Data view object, strongly typed Dataset Objects. Working with XML data, Building Windows based and web based application. .Net data providers

UNIT V ASP.NET& Web services

9 3 0

Creation of web services, web service with ASP.NET, ASP.NET applications with databases, cookies and session handling.

Text Book:

1. Microsoft, "C# Languages Specifications", Microsoft Press 2001
2. Gaddis, Irvine, Denton "Starting out Visual Basic .NET programming", Dreamtech publication 2nd edition
3. Sceppe "Microsoft ADO.NET" Microsoft press 2001
4. Basuria, Batongbal, Bohling, Clark, "Professional ASP.NET and Web services", Wiley publication
5. Starting out with Visual Basic .Net Programming, 2nd Edition, Tony Gaddis, Kip Irvine, Bruce Benton .

Reference Book:

1. Homer, Sussman, Howard Francis, Watson, Anderson, "Professional ASP.NET1.1" Wiley Dreamtech 2004 edition

BCS405	Object Oriented System Analysis and Design	3	0	0	3
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UNIT I

9 0 0

Object Orientation – System Development – Review of Objects- Inheritance – Object Relationship-Dynamic Binding –OOSD Life Cycle - Process – Analysis – Design – Prototyping – implementation – Testing – Overview of methodologies.

UNIT II

9 0 0

OMT – Booch Methodology – Jacobson methodology – patterns – unified approach -UML –Use case – Class diagrams –Dynamic modeling.

UNIT - III

9 0 0

Use case model – Creation of Classes – Noun Phrase Approach – Responsibilities – Collaborators – Object Relationships – super Sub classes – Aggregation

UNIT – IV

9 0 0

OO Design Axioms – Class Visibility – refining Attributes – Methods – Access layer – OODBMS – Table – Class Mapping view layer

UNIT – V

9 0 0

Quality Assurance testing – inheritance & testing – test plan – usability testing –User satisfaction - testing.

TEXTBOOK:

1. Ali Bahrami,"object oriented system development ", McGraw Hill international, 1999

REFERENCE:

1. Grady Booch, "*Object oriented Analysis & design*" , Addison -Wesley Longman, 1994.
2. Rambaugh j , blaha M premeriani, W., Eddy F and Loresen W., "*object oriented Modeling & design*", PHI ,1997

BCS407	DATAMINING AND WAREHOUSING	3	0	0	3
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Unit I - Introduction

Introduction - Client server computing model-Data warehouse-Parallel systems-Cluster Systems-Distributed DBMS-Client server RDBMS solutions.

Unit II - Data Warehousing

Components-Building a Data Warehouse-mapping Data Warehouse to a Multiprocessor-Architecture-DBMS Schemes for Design Support-Data Extraction-Cleaning and Transferring tools-Meta data.

Unit III - Business tools

Reporting and Query tools and Application-OLAP-Patterns and Models-Statistics-Artificial Intelligence.

Unit IV - Data Mining

Introduction-Design tools- Neural Networks – Nearest Neighbor and clustering – Genetic Algorithm – Rule induction – Selecting and using the right technique.

Unit V - Data visualization and overall perspective

Tools-Applications-Data visualization Techniques– Case Study

Text Book:

1. Alex Berson-Stephen. J.Smith, “Data warehousing-Data Mining & OLAP”, TMH 2006

Reference Books:

1. Margaret H Dunham, “Data Mining – Introduction and advanced topics”, Pearson Education 2005
2. Jiawei Han and Micheline Kamber , “Data mining concepts and techniques”, Morgan Kaufmann Publishers,2005
3. Arun K Pujari, “Data Mining Techniques”, Universities Press (India) Ltd., 2001

BCS423	COMPREHENSION	0	0	0	2
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The objective of comprehension is to provide opportunity for the student to apply the knowledge acquired during the academic program to real – life problems which he/she may have to face in future as an engineer.

Three periods per week shall be allotted in the time table for the activity and this time shall be utilized by the students to receive guidance from the members of faculty on solving real – life problems, practice solving these problems and on group discussions, seminar presentation, library reading as assigned by the faculty member in-charge.

The continuous assessment and semester evaluation may be carried out as specified in the guidelines to be issued from time to time.

BCS427	Software System Development Lab with IBM Rational Rose	0	0	3	1
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LIST OF EXPERIMENTS

Develop the following software using software Engineering methodology:

1. Online Railway reservation system
2. Simulator software for parallel processing operation
3. Payroll processing application
4. Inventory system
5. Simulator software for compiler operation
6. Automating the Banking process
7. Software for game
8. Library management system
9. Text editor
10. Create a dictionary
11. Telephone directory
12. Create an E- Book of your choice.

SOFTWARE REQUIRED:

Languages: C/C++/JDK 1.3, JSDK, WEB BROWSER & UML
Any Front End Tools (Like VB, VC++, Developer 2000)
Any Back End Tools (Like Oracle, MS-Access, SQL)

BCS 421	DOT NET LAB	O O 3 1
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S.NO	Name of the Experiment
C# .NET	
1.	Implementation of Operator Overloading a. Complex Number b. Matrix c. Time(+.-)
2.	Implementation of Multiple Inheritance a. Employee b. Area of an Object
3.	Implementing Multithreading
VB .NET	
4	Designing a Calculator
5	Implement File Handling(Read,Delete,Modify)
6	Implement Exception Handling a. Voter problem b. Student Status
7	Event Handling – Mouse Click,Button click
ASP .NET	
8	Super Market
9	Hotell Management System
<u>ADO. NET</u>	
10	Student Attendance Calculation
11	Hospital management System
<u>WEB SERVICE</u>	
12	Income tax calculation

BCS425	PROJECT (Phase-I)	0	0	4	2
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SEMESTER VIII

BMA402	PRINCIPLES OF MANAGEMENT	3	0	0	3
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Unit 1 MANAGEMENT AND ITS ENVIRONMENT

9 0 0

Management-Definition-Functions-Evolution of Modern Management-Scientific Management Movement-Development of Management Thoughts-Different Schools of Management-Forms of Organization-Individual Ownership-Partnership-Joint Stock Companies-Co-Operative Enterprises-Public Sector Undertakings-Corporate Framework-Shareholders-Board of Directors-Committees-Chief Executive-Line and Functional Managers, Constraints-Environmental-Financial-Legal-Trade Unions-Technology.

Unit II MANAGEMENT OF ORGANISATION

9 0 0

Planning –Nature and purpose-Objectives-Strategies-Policies and planning premises-Decision making-Organizing –Nature and process-Premises-Departmentalization-Line and staff-Decentralization-Organizational cultures-staffing-Selection and training-placement-Performance operation-Career strategy-Organizational development-Leading-Managing human factors-motivation-Leadership-Communication, Controlling-System and process of controlling-Controlling techniques-productivity and operations management-Preventive control, Industrial safety.

Unit III INDIVIDUAL BEHAVIOUR

9 0 0

Organizational behavior-Definition-Organization-Manual role and functions-Organizational approaches-Individual behaviors-Causes-Environmental effects-Behavior and performance-Perception-Organizational implications-Personality-Contributing factors-Dimension, Motivation-Need theories-Process theories-Job satisfaction-Learning and behavior-Learning curves-Work design and approaches.

Unit IV GROUP DYNAMICS

9 0 0

Group behavior-Groups-Contributing factors-Group norms, Communication-Process-Barriers to communication-Effective communication, Leadership-Formal and informal characteristics-Manual grid-Leadership styles-Group decision making-Leadership role in Group decision-Group conflict-Types-Causes-Conflict resolution-Inter group relations and Conflicts, Organization Centralization & Decentralization –Formal and Informal-Organizational structures-Organizational change and developments-change process-Resistance to change-O.O.Programme-Culture and ethics.

Unit V MODERN MANAGEMENT CONCEPTS

9 0 0

Management by Objectives (MBO)-Principles and steps-Advantages and Disadvantages-Management by Exception (MBE), Strategic management, planning for future direction-SWOT analysis-Evolving development strategies, Information corporate models-Business management games-Electronic Commerce/Business Newer Concepts-Business Process Re-Engineering (BPR)-Enterprise Resource Planning (ERP)-Supply Chain Management (SCM) Activity Based Management (ABM).

TEXT:

1. JI.T.S.CHANDRAN, Organizational Behaviours-Vikas Publishing House Pvt.Ltd.1994
2. CHANDAN J.S. “Management, Concepts and Strategies”, Vikas Publications, 2003.

REFERENCES:

- 1.HEROLD KOONTZ and HEINZ WEIHRICH, Essentials of Management-McGraw Hill Publishing Co.1990.
2. ERNEST DALE, Management Theory and Practice-McGraw Hill Book Company.
3. RICHARD PETTINGER, Mastering Organizational Behaviors-Macmillan Press 2000.

BCS422	PROJECT (Phase-II)	0	0	12	6
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6TH SEMESTER ELECTIVES:

BCSE02	PRINCIPLES OF PROGRAMMING LANGUAGES	3	0	0	3
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Unit I Preliminaries

9 0 0

Programming domains, language evaluation criteria, language design -categories-tradeoffs, implementation methods, programming environments.

Syntax and Semantics: Problem describing syntax-formal methods for describing syntax-recursive descent parsing, attribute grammar, dynamic semantics. Names, Bindings, Type Checking and Scopes: Names -variables-concept of binding-strong typing -type compatibility-scope and lifetime.

Unit II Data Types

9 0 0

Primitive - character string –user- defined -array-associative array-record -unions -set-pointers-abstract data types.

Expression and Assignment Statement: Arithmetic expressions-overloaded operators-type conversions-relational and Boolean expressions-assignment statements-mixed mode assignment.

Unit III Statement - level Control Structures

9 0 0

Compound-selective-iterative statements, unconditional branching and guarded commands. Subprograms: Fundamentals -design issues-local referencing-parameter passing-overload subprograms-design issues of functions-accessing non-local environment-user defined overloaded operators-implementing sub programs.

Unit IV Abstract data types

9 0 0

Concepts of abstraction, encapsulation, data abstraction, language examples- parameterized abstract data type Support for Object Oriented Programming: Object oriented programming-design issue. Smalltalk -Example programs- features- evaluation. Support for object oriented programming in c++-java-Ada 95-eiffel, implementation of object oriented constructs.

Unit V Concurrency

9 0 0

Subprogram level concurrency-semaphores-monitors-message passing-concurrency in Ada 95,java threads, statements level concurrency.

Exception Handling: Exception handling in PL/I-ADA-C++-JAVA.

Textbook:

1.ROBERT. W.SEBESTA. “Concepts of programming languages”- Addison Wesley.
1st Indian reprint, 1999

Reference:

- 1.Pratt, Zelkowitz, “Programming Languages: Design and Implementation”, Pearson Education, 3rd Edition, 1998
- 2.Ravi Sethi, “Programming languages” Addison Wesley 2nd Edition 1999.
3. Doris Appleby & Julius J Vande Kopple, “Programming Languages Paradigm and Practice”. Tata McGraw Hill,2nd Edition 2003

BCSE04	ALGORTHIMICGRAPH THEORY	3	0	0	3
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UNIT 1

9 0 0

(a) Graphs and Graph Theory (b) Some Typical Applications (c) Outline of the Course
 (a) Labeled and Unlabeled Graphs (b) Invariants of a Graph (c) Order, Size, Degree,(d) Computer representation of graphs/digraphs i. Adjacency and incidence matrices ii. Adjacency and incidence lists
 (e) Graphical Sequence i. A characterization of graphical sequences (f) Walks, Trails, Paths, Cycles
 (g) Subgraphs of a Graph (h) Induced Subgraphs (i) Spanning Subgraphs

UNIT 2

9 0 0

(a) Connected and Disconnected Graphs/Digraphs (b) Trees and Forests (c) Complete Graphs & Tournaments (d) Bipartite Graphs i. A characterization of bipartite graphs (e) Hamiltonian Graphs
 (f) Eulerian Graphs/Digraphs i. A characterization of Eulerian graphs (g) Iterative Graphs (h) Random Graphs (i) Other Special Graphs

UNIT 3

9 0 0

(a) Some Properties of Trees (b) Spanning Trees of a Graph (c) Optimal Spanning Trees (d) Different Optimality Criteria (e) Finding Optimal Spanning Trees (f) Some Applications

UNIT 4

9 0 0

DIRECTED TREES (a) Some Properties of Directed Trees. **COUNTING TREES**

(a) Counting Spanning Trees of a Labeled Graph **MAXIMUM FLOW**

(a) Problem Description (b) Evolution of Maximum-Flow Algorithms (c) Ford-Fulkerson Results
 (d) Edmond-Karp Algorithm (e) MPM Algorithm (f) Other MFAs

UNIT 5

9 0 0

APPLICATIONS OF MAXIMUM-FLOW

(a) Finding Arc-Disjoint paths (b) Finding edge-disjoint Paths (c) Finding vertex-disjoint paths

11. GRAPH CONNECTIVITIES (a) Problem Description (b) Evolution of Connectivity Algorithms (c) Computing _ of a Graph (d) Computing _ of a Graph (e) Computing _ of a Digraph
CONNECTIVITY GENERALIZATIONS

(a) Problem Description (b) Conditional Connectivities (c) Restricted Connectivities (d) Some Applications **MATCHINGS** (a) Problem Description (b) Matching Algorithms (c) Some Application

Text Book:

1.Charles Golumpic ,Algorithmic Graph Theory

Reference book:

1. Narsingh Deo, Graph theory with applications to Engineering and Computer Science, Prentice Hall of India (P)Ltd.,1986.

BCSE06	DESIGN OF ALGORITHMS	3	0	0	3
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Unit 1 ADVANCED ALGORITHMS

9 0 0

Polynomials-evaluation-matrices-multiplication-FFT and convolution-Binary matrices-Transitive closure-Number theoretic algorithm –Chinese remainder theorem-RSA public key crypto systems.

Unit II DIVIDE AND CONQUER

9 0 0

General methods-typical problems finding the minimum and maximum-strassen's matrix multiplications-convex hull.

Unit III GREEDY METHOD

9 0 0

General method-Knapsack problem-tree vertex splitting-job sequencing with deadlines.

Unit IV DYNAMIC PROGRAMMING

9 0 0

General method-0/1 Knapsack-Traveling salesman Problem-Flow shop scheduling.

Unit V BACK-TRACKING & BRANCH AND BOUND TECHNIQUES 9 0 0

General method-8 Queen's problem-Graph coloring-Branch and Bound method-0/1 Knapsack-Traveling Salesman.

Text Books:

1.Thomas H.Cormen, Charles.E.Leiserson, Ronald L.Rivest, INTRODUCTION TO ALGORITHMS

References.

- 1.Ellis Horowitz,sartaj sahani,Sanguthevar rajashekar,"Computer algorithms" , Prentice Hall of India.1998.
- 2.Sara base and Allen Van Gelder,"Computer algorithms", Galgotia 2000

BCSE08	UNIX INTERNALS	3	0	0	3
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UNIT I

9 0 0

UNIX Operating System – History – Commands – System Structure – Shell Programming – System/call – UNIX Communication – Architecture – File Sub System and Process – Sub –System – User – Kernel Modes – Process States and Transition – Sleep and Wakeup.

UNIT II

9 0 0

Buffers- Structures and Representator – Implementation of System Calls.

UNIT III

9 0 0

Structure – Context – Address Space – Creation – Scheduling – Thread implementation of System Call.

UNIT IV

9 0 0

Swapping – Segmentation – Demand Paging - implementation of System Call.

UNIT V

9 0 0

Drivers – Streams – Implementation of IPC Mechanism.

Text Books:

1. Bach M.J. “The Design of the unix Operating System “ , Prentice Hall of India, 1996

Reference Books :

1. Goodheart B. Cox J, “The Magic Garden Explained”, Prentice Hall of India, 1996

BCSE10	BUSINESS COMMUNICATION	3	0	0	3
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Unit I INTRODUCTION

9 0 0

Definition- Trade and investment flow – economic theories –forms of international business.

Unit II INTERNATIONAL BUSINESS ENVIRONMENT

9 0 0

Globalization of business – wto and trade- emerging issues – implication for India – regional trade blocks – trade among regional groups.

Unit III ORAL COMMUNICATION

9 0 0

Verbal communication, body language, one to one, one to many, many to many communication, mass media, listening techniques – interview techniques.

Unit IV WRITTEN COMMUNICATION

9 0 0

Characteristics of business letters / electronic communication – graphic and visual aids, generating reports, structuring. Preparing tenders, quotations, comparative statements

Unit V GROUP COMMUNICATION

9 0 0

Efficient Group discussion, essentials – role playing team building, integrated communication, in – basket exercise

Text Books:

1. John.D.Daniels and Lee H.Radebang, international business, Pearson Education Asia, New Delhi 2000.
2. Richard m.Hodgets and Fred Luthans, international business, Pearson Education Asia, New Delhi 2000.

Reference Books:

1. Charles W.L.Hill. International business, McGraw Hills, New York, 2001

BCSE12	ADVANCED OPERATING SYSTEM	3	0	0	3
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Unit 1 MULTIPROCESSOR OPERATING SYSTEMS

9 0 0

Threads –Process synchronization –Processor scheduling-Memory management-Reliability-Fault tolerance.

Unit II NETWORK OPERATING SYSTEMS

9 0 0

Types of NOS –NOS to LANs-Choosing and NOS-multiple NOS on a single network-NOS and network management –future trends

Unit III Distributed Operating Systems

9 0 0

Issues-Communication primitives-remote procedure call-Logical clocks-Vector clocks-distributed mutual exclusion-non token based algorithms-token based algorithms-issues in deadlock detection and resolution-centralized and distributed deadlock detection algorithms-election algorithms, classification of agreements problems-solutions to the Byzantine time agreement problem-impossibility result. Issues in load distributing –load distributing algorithms-performance comparison. Distributed file system design issues-mechanisms for building DFS-case studies.

Unit IV Database Operating Systems

9 0 0

Requirements-concurrency control model-serializability theory-distributed database systems-synchronization primitives-lock based and time stamp based algorithms-Fully replicated database systems.

Unit V Real time Operating Systems

9 0 0

Architecture of real time systems-OS issues-Performance measures-estimating program run times –uniprocessor scheduling-IRIS tasks-task assignment mode changes-fault –tolerance scheduling.

Text Books.

1.Mukesh singhal,Niranjan.G.Shivarathiri-ADVANCED CONCEPTS AND OPERATING SYSTEMS,McGRAW HILL ,NEW YORK,1994(I,III,IV unit).

2.C.M.Krishna,Kang .G. Shin”REAL TIME SYSTEMS”,McGraw Hill,1997(V unit)

3.Philip Hunter NETWORK OPERATING SYSTEMS-MAKING RIGHT CHOICES Addison Wesley 1995(II unit)

Reference books.

1.Andrew S. Tanenbaum -MODERN OPERATING SYSTEMS, Prentice Hall, NJ (sec. 9-13 only).

2.Gary Nutt –OPERATING SYSTEMS –A MODERN PERSPECTIVE Addison Wesley 2000.

ELECTIVE-2 – 6TH SEMESTER

BCSE14	HIGH PERFORMANCE MICROPROCESSOR	3	0	0	3
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Unit I CISC Principles:

9 0 0

Classic CISC Microprocessors – Advanced Processors of the Intel Family – Architecture – Paging and Segmentation – Real and Virtual Mode Execution – Protection Mechanism – Task Management.

Unit II CISC Microprocessor :

9 0 0

Study of a Current CISC Microprocessor Architecture Operating Modes – Bus Cycles – Performance – Related Features – Supporting devices – Bus System Support.

Unit III RISC Principles:

9 0 0

RISC Processors – Principles – Architectural Features of DEC Alpha/ Power PC/Sun Sparc/MIPS RX100 Family.

Unit IV RISC Microprocessor:

9 0 0

Study of a Current RISC Microprocessor Architecture – Performance Related Features – Supporting Devices – Bus System Support.

Unit V Case Studies:

9 0 0

Case Studies and Comparison.

Text Book:

1.D. Tabak, “Advanced Microprocessors”, McGraw –Hill, 1996.

Reference Books:

1. Barrey B.Brey, “The Intel Microprocessor 8086/8088, 801836/80188,80286,8036,80486, Pentium and Pentium Preprocessor – Architecture, Programming and Interfacing”, PHI, 1997.

BCSE16	ADVANCED SOFTWARE ENGINEERING	3	0	0	3
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Unit I SOFTWARE PROJECT MANAGEMENT

9 0 0

Comparison between process and product-scheduling and tracking-management activities-software process and its problems in all phases-problems with software production-IEEE standard of software project management plan.

Unit II REQUIRMENT AND SPECIFICATION

9 0 0

Requirement analysis-definition-specification-formal specification-algebraic specification-error specification-model based specification-z schemas-z specification process.

Unit III OBJECT ORIENTED SOFTWARE ENGINEERING

9 0 0

Introduction to object oriented development-architecture-object oriented testing, object oriented metrics-object and productivity-object documentation-MSG case study.

Unit IV SOFTWARE ENGINEERING

9 0 0

Reusability –characteristics-reuse strategy\assessing reuse maturity-reengineering for reuse-case studies-Raytheon missile systems division, NASA software etc.

Unit V PROCESS AND PRODUCT IMPROVEMENTS

9 0 0

Integrated environments –platform services-frameworks services-SIE process maturity model-process clarification.

TEXT BOOK:

1.Stephen.R.Schach,”software engineering with JAVA”, Tata McGraw-Hill, 1998.

REFERENCE BOOKS:

1. Even-Andre etal,”Software Reuse-A Holistic Approach”, John Wiley and Sons, 1996.
2. Ivar Jacobson etal,”Object Oriented Software Engineering-A Use Case Driven Approach”, ISE, 1992.
- 3.Ian Sommerville,”Software Engineering”, Addison Wesley(6E),2000

BCSE18	COMPUTER PERIPHERALS AND INTERFACING	3	0	0	3
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Unit I Microcomputer System

9 0 0

Peripheral Devices-KeyBoard-CRT Display Monitor-Printer-Magnetic Storage Devices-FDD-HDD-Special Peripherals-PC Hardware Overview-BIOS-DOS Interaction-PC Family-PC Hardware-Mother board Logic-Memory Space-I/O Data transfer-DMA channels-KeyBoard Interface-Parallel Interface-Serial Interface-CRT Display Controller-FDC-HDC-Hard disk card-Memory Refresh-POST sequence.

Unit II Hardware Components and ICs

9 0 0

Microprocessors in PC-Intel 8088-Internal Organization-Bus Cycle-8088 Operation-I/O Addressing-Interrupt Handling-8088 Instruction-Coprocessor-Support chips in the Mother-board-Dump and Smart Chips-Clock Generator 8284-Bus Controller-Interrupt Controller 8259A-Programmable Interval Timer 8253-8255A-5PPI-DMA Controller 8237A-5.

Unit III Motherboard Circuits

9 0 0

Motherboard functions-Reset Logic- CPU Nucleus Logic-Wait state logic-Bus Arbitration-RAM Logic-ROM Decode Logic-RAM Parity Logic-NMI-Logic-I/O Ports Decode Logic-Time of day (TOD) Logic-Dynamic Memory Refresh Logic-Speaker Logic-Mode Switch Input Logic-KeyBoard Interface-Coprocessor Unit-Control Bus Logic-Address Bus Logic-Data Bus Logic-I/O Slot Signals-New Generation Mother Board-Mother Board Connectors and Jumpers-Design Variations-SMPS-Printer Controller -Floppy Disk Controller.

Unit IV Hard Disk Controller Subsystem-Display Adaptor

9 0 0

Hard Disk Controller Subsystem-Display Adaptor-CRT Display-CRT Controller Principle-CRT Controller Motorola 6845-MDA Design Organization-Color/Graphics Adapter-Advanced Graphics Adapter-New Generation Display Adapters-Device Interface-Auxiliary Sub-Systems-Serial Port in PC-RTC-LAN.

Unit V Installation and Preventive Maintenance

9 0 0

Pre-installation planning-Practice-Routine Checks-Special Configurations-Memory, Hard Disk up gradation-DOS and Software-Preventive Maintenance-System Usage-Trouble-shooting-Nature and Types of Faults-Trouble-shooting Tools-Post- Motherboard Problems-Diagnosis-FDC, FDD, HDC, HDD Problems-Overview of Advanced PCs.

TEXT BOOK:

1. B.GOVINDARAJULU, IBM PC and Clones Hardware, Trouble Shooting and Maintenance-Tata McGraw Hill Pub.Ltd, Sixth Reprint, 1993.

REFERENCE BOOK:

1. Antonakus, "An introduction to the Intel family of microprocessors", III ed., Pearson Education, 2004.
2. Buchanan, "PC Interfacing, Communications and Windows Programming", Pearson Education, 2002.

BCSE20	DECISION SUPPORT SYSTEM	3	0	0	3
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UNIT-I Introduction:

9 0 0

Decision support at roadway package system , Managers and decision making ,Managerial decision making and informative system ,Mangers and computerized support ,Framework and concept of decision support ,Systems, Models , Modeling process, intelligence phase , Design phase , Implementation phase.

UNIT-II DSS:

9 0 0

DSS configuration , Characteristics and capabilities of DSS, component of DSS , Data management subsystem ,Model management subsystem, Dialog subsystem , classification of DSS, Distinguishing DSS from MIS and management science ,Modelling for MSS , Static and dynamic models, Treating certainty, Uncertainty and risk , Influence diagrams, Optimization via mathematical programming , Heuristic program, Simulation, Multidimensional modeling, Visual spreadsheet, Financial and planning modeling

UNIT-III Intelligent DSS, User Interface:

9 0 0

Knowledge based DSS concepts and definitions, Artificial intelligence versus natural intelligence, Knowledge in AI, Types of knowledge based DSS, Intelligent DSS, User interface, Interface models ,Graphics, Multimedia and hypermedia ,GIS, NLP overview

and methods ,DSS development strategies, Development process, Team development DSS , DSS development tools.

UNIT-IV Enterprise Support System:

9 0 0

Networked Decision Support: The internet, Intranet and collaborative technologies, Group decision support system -Decision making in groups , Goal of GDSS , GDSS software , Idea generation , Negotiation support system -EIS concepts and definition , Executive role , Characteristics of EIS, Comparing and integrating EIS and DSS, Enterprise EIS, EIS implementation.

UNIT-V Expert System and Intelligent System :

9 0 0

Fundamentals of expert system, Expert system concepts, Structure, Human elements , Working, Benefits, Limitation, Success factors, Types, Knowledge engineering, Scope of knowledge, Difficulties in knowledge acquisition, Methods of knowledge acquisition, Knowledge representation, Inferencing with rules, Frames , Model-based reasoning, Case-based reasoning, Introduction to building expert systems.

TEXT BOOK:

1. EFRAIM TURBAN, JAYE, ARONSON, Decision Support Systems and Intelligence Systems-5th Edition, Addison Wesley, 1998.Excluding Chapters 4,17,18,19.

REFERENCE BOOK:

1. Turban E., "Decision Support and Expert Systems, Management Support Systems", 4th Ed., Maxwell Macmillan, 1995.
2. V.S. Janaki Raman and K. Sarukesi, "Decision Support Systems", Prentice Hall of India Pvt. Ltd., 1999.

BCSE22	EMBEDDED SYSTEMS	3	0	0	3
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UNIT I

9 0 0

Embedded Computer systems: - Applications, software issues, memory mapped architecture, 68HCII Architecture and different addressing modes, study of 8051 microcontroller

UNIT II

9 0 0

Programming of PIC Micro controllers. Architecture of 16F873 and 16F877 Micro controllers. Instruction set of PIC micro controllers. Simple Example programs with PIC micro controllers

UNIT III

9 0 0

Software Development: - Quality programming, memory allocation, self-documenting code, Abstraction, Device drivers and object oriented interfacing

UNIT IV

9 0 0

Study of 'C' cross Compilers for programming Microcontrollers. Examples using 'C' cross compiler for PIC Microcontroller environment.

UNIT V

9 0 0

Threads interrupt synchronization, Timing Generation & measurements, Serials I/O devices, Parallel Port interfaces, memory interfacing and high speed I/O interfacing.

Text Books

1. Jonathan.W.Valvano, Brooks 'Embedded Microcomputer system', COLE Thomson learning series.

Reference Books:

- 1.Myke Predko , "Programming and customizing the Microcontroller", Tata McGraw Hill Pvt. Ltd.

BCSE24	DISTRIBUTED COMPUTING	3	0	0	3
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UNIT-I

9 0 0

Fundamentals: Introduction to distributed computing system, Evolution, Different models, Gaining popularity, Definition, Issues in design, DCE, Message passing-Introduction, Desirable features of a good message passing system, Issues in IPC, Synchronization, Buffering, Multidatagram, Process addressing, Failure handling, Group communication.

UNIT-II

9 0 0

RPC: Introduction, RPC model, transparency of RPC, Implementing RPC mechanism, Stub generation, RPC messages, Marshalling arguments and results, Server management, parameter-passing semantics, Call semantics, Communication protocols for RPCs, Complicated RPC, Client-server binding, exceptional handling, security, special types of RPC, RPC in heterogeneous environments, Lightweight RPC, Optimization for better performance, Case studies-Sun RPC, DCE, RPC.

UNIT-III

9 0 0

Distributed Shared Memory and Synchronization: Introduction, General architecture of DSM systems, Design and implementation issues of DSM, Granularity, Structure of shared memory space, Consistency model, Replacement strategy, Thrashing, Different approaches to DSM, Advantages of DSM, Clock synchronization, Event ordering, Mutual exclusion, Deadlock, Election algorithm.

UNIT-IV

9 0 0

Resource and Process Management: Introduction, Desirable features of a good global scheduling algorithm, Task assignment approach, Load-balancing approach, Load sharing approach, Process migration, Threads.

UNIT-V

9 0 0

DFS and Security: Desirable features of good DFS, File models, File accessing, models, File sharing semantics, File caching schemes, File replication, Fault tolerance, Atomic Transaction, Design principles, Case Study: DCE DFS, Potential attacks to computer system, Cryptography, Authentication, Access control, Digital signatures, Design principles, DCE security service.

TEXT BOOK

- 1. PRADEEP K. SINHA, Distributed Operating System - PHI.**

REFERENCE BOOK:

- 1. ANDREW S. TENENBAUM, Modern Operating System - 2nd Edition, PHI, 1991.**

ELECTIVE-III 7TH SEMESTER

BCSE01	DISTRIBUTED OBJECTS	3	0	0	3
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Unit I INTRODUCTION

9 0 0

Objects-distributed objects-historical perspective-distributed objects and computing methodologies.

Unit II CORBA:

9 0 0

Architecture-interface definition language –static and dynamic method invocation-interface repository-basic object adapter-services.

Unit III DEVELOPMENT OF A CORBA APPLICATION:

9 0 0

Client applet-server-IDL contract-database interface.

Unit IV DCOM:

9 0 0

Model and services-object and object hierarchies-location transparency-configuration information-interface definition language (MIDL)-applications.

Unit V CURRENT ISSUES:

9 0 0

Internet inter ORB protocol-CORBA-DCOM interoperability issues-CORBA facilities-CORBA domain-CORBA migration process-other distributed object paradigms.

TEXT BOOKS:

1. T.J.MOWBARY AND W.A. RUH “INSIDE CORBA” Addison Wesley 1997.

REFERENCE BOOKS:

1. R.ORFALI AND D.HARKEY “CLIENT SERVER PROGRAMMING WITH JAVA AND CORBA”, 2nd edition, JOHN WILEY AND SONS 1999.
2. M.HENNING AND S.VNOSKI “ADVANCED CORBA PROGRAMMING WITH C++”, Addison Wesley 1999.
3. STAMA, GARBIS, RUSSEL “ENTERPRISE CORBA”, Addison Wesley 1999.
4. F.E. REDMOND,”DCOM MICROSOFT DISTRIBUTED COMPONENT OBJECT MODEL” IDG books worldwide INC 1997.
5. R.SESSIONS,”COM AND DCOM”, JOHN WILEY AND SONS 1998.
6. T.I.THAI,”LEARNING DCOM”, O'REILLY 1999.

BCSE03	TCP/IP DESIGN AND IMPLEMENTATION	3	1	0	4
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UNIT I: 9 3 0

Inter networking issues-routing-internet addressing-address resolution protocol (ARP)-reverse address resolution protocol (RARP)-packet format-routing.

UNIT II: 9 3 0

Fragmentation and reassembly-error processing-IP V6-UDP-basic concepts-TCP data structures.

UNIT III: 9 3 0

Finite state machine implementation-output processing-timer management-flow control-urgent data processing.

UNIT IV: 9 3 0

Core gateway system-autonomous systems and considerations-interior gateway protocols, transparent gateways, DNS.

UNIT V: 9 3 0

Sockets-RPC mechanisms-Telnet-Mail systems.

TEXT BOOKS.

1. COMER D.E. AND STEVENS D.L. INTERNETWORKING WITH TCP/IP VOL I II III 2nd edition Prentice hall of India 1997.

REFERENCE BOOKS:

1. COMER D.E. AND STEVENS D.L. INTERNETWORKING WITH TCP/IP VOL III Prentice hall of India 1997

2. STEVENS W.R "TCP/IP ILLUSTRATED VOL I ,II AND III ,Addison Wesley 1999

3. COMER D.E."INTERNETWORKING WITH TCP/IP "VOL I 3rd edition Prentice hall of India, 1997.

BCSE05	NETWORK SECURITY & MANAGEMENT	3	0	0	3
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UNIT I

9 0 0

Network monitoring- Network control – OSI, Internet and IEEE network management standards- SNMP – Concepts - MIBs.

UNIT II

9 0 0

Implementation issues – SNMPv2,- SNMPv3,- RMON – CMIP.

UNIT III

9 0 0

Public Key, Private Key- DES / RSA – Authentication – PGP –PEM – Kerberos – Auditing & Logging.

UNIT IV

9 0 0

TCP/IP Security, NFS Security, WWW Security – Firewalls.

UNIT V

9 0 0

High Speed network protocols – Secure Protocols – Current Trends.

TOTAL: 45

TEXT BOOKS

1. William Stallings, “SNMP, SNMPv2, SNMPv3 AND RMON AND 2”, Addison Wesley, 1999.
2. Simson Garfinkel and Gene Spafford, “Practical UNIX & Internet Security”, O’Reilly, 1999.
3. William Stallings, “CRYPTOGRAPHY AND NETWORK SECURITY”, Practice Hall 1999.

REFERENCES

1. Uday O.Pabrai, Vijay K.Gurbani, “Internet & TCP/IP Network Security”, Mc Graw-Hill, 1996
2. Uyles Black, “Network Management Standards”, McGraw-Hill, 1995

BCSE07	NEURAL COMPUTING	3	0	0	3
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UNIT I

9 0 0

Introduction to Neural Networks – Basic concepts of Neural Networks – Inference and Learning – Classification models – Association models – Optimization models – Self organization models.

UNIT II

9 0 0

Supervised and Unsupervised Learning - Statistical Learning - AI learning - Neural Network Learning - Rule based NEURAL Networks - Network Training - Network Revision - Issues - Theory of Revision - Decision Tree Based NN - Constraint based NN.

UNIT III

9 0 0

Incremental learning - mathematical Modeling - Application of NN - Knowledge based Approaches.

UNIT IV

9 0 0

Heuristics - Hierarchical Models - Hybrid Models - Parallel Models - Differentiation Models - Control Networks - Symbolic Methods - NN models.

UNIT V

9 0 0

Structures and sequences - Spatiotemporal NN - Learning Procedures - Knowledge based Approaches.

TEXT BOOK:

1. LIMIN FU, Neural Networks in Computer Intelligence - McGraw Hill International Edition 1999.

REFERENCE:

1. JAMES A.FREEMAN and DAVID M.SKAPURA, Neural Networks - 1st ISE Reprint 1999, Pearson education

BCSE09	VLSI	3	1	0	4
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UNIT – I

9 3 0

Digital systems and VLSI - Integrated Circuit Manufacturing - CMOS Technology - Integrated Circuit Design Techniques - Transistors and Layout - Introduction - Fabrication Processes - Transistors - Design Rules - Layout Design and Tools.

UNIT - II

9 3 0

Logic Gates - Introduction - Combinational Logic Functions - Static Complementary Gates - Wires and Delay - Switch Logic - Alternative Gate circuits - Combinational Logic Networks: Introduction - Layout Design methods - Simulation - Combinational Network delay - Crosstalk - Power Optimization - Switch Logic Networks - Combinational Logic Testing.

UNIT - III

9 3 0

Sequential Machines - Introduction - Latches and flip-flops - Sequential Systems and Clocking Disciplines - Sequential System Design - Power Optimization - Design Validation - Sequential Testing - Subsystem Design - Principles - Combinational Shifters - Adders - ALUs - Multipliers - High Density Memory - Field Programmable Gate Arrays - Programmable Logic Arrays.

UNIT - IV

9 3 0

Floor Planning - Methods - Off-chip Connections - Architecture Design. Introduction - Register - Transfer Design - High level Synthesis - Architecture for low power - Architecture Testing.

UNIT - V

9 3 0

Chip Design - Introduction - Design Methodologies - Kitchen Timer Chip - PDP - 8 Data Path - CAD systems and Algorithms - Introduction - CAD system - Layout Synthesis - Layout analysis - Timing analysis optimization - Logic Synthesis - Test Generation - Sequential Machine optimization - Scheduling and Binding - Hardware/Software Co-Design.

TEXT BOOK:

1. WAYNE WOLF, Modern VLSI Design (Systems on Silicon) – Pearson Education PTR 2000.

REFERENCE BOOK:

1. Wayne Wolf, Modern VLSI Design System-on-chip Design 3rd ed., Pearson Education, 2000.

BCSE11	DIGITAL IMAGE PROCESSING	3	0	0	3
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UNIT-I Introduction :

9 0 0

Digital image representation-Fundamental steps in image processing -Elements of digital image processing systems,Digital Image Fundamentals :Elements of visual perception-A simple image model -Sampling and quantization -Some basic relationship between pixels-Imaging geometry - Photographic film.

UNIT-II Image Transforms:

9 0 0

Introduction to the Fourier transform -The Discrete Fourier transform -Some properties of the two dimensional Fourier transform -The fast Fourier transform-Other seperable image transforms-The hotelling transform.

UNIT-III Image Enhancement :

9 0 0

Background -Enhancement by point Procesing -Spatial filtering-Enhancement in the frequency domains -Generations of the spatial masks from frequency Domain specifications-Color image processing -Image Restoration: Degradation Model -iagonalization of Circulant and Block circulant Matrices -Algebraic approach to restoration-Inverse filtering -Least mean square filter -constrained least square restoration- Restoration in spatial domain-Geometric transformation.

UNIT –IV Image compression:

9 0 0

Fundamentals -image Compression models -Elements of information Theory - Error-free Compression - Lossy Compression - Image Compression standards, Images Segementation : Edge linking and boundary detection - Thresholding - Region - Oriented segmentation - The use of motion in segmentation.

UNIT-V Representation and Description:

9 0 0

Representation Schemes - Boundary descriptors - Morphology - Relational descriptors, Recognition and Interpretation: Elements of image Analylsis - Pattern and pattern classes - Decision theoretic methods - Structural Methods - Interpretation.

TEXT BOOKS:

1. RAFAEL C.GONZALEZ and RICHARD E.WOODS. Digital Image Processing - Fifth Indian Reprint - 2000, Addison Wesley.

REFERENCE BOOKS :

1. M.A.SID AHMAED, Image Processing Theory, Algorithm and Architecture - McGraw Hill, 1991.
2. DON PEARSON, Image Processing, McGraw Hill, 1991.

ELECTIVE –IV 7TH SEMESTER

BCSE13	MOBILE AND WIRELESS NETWORKS	3	0	0	3
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UNIT-I **9 0 0**

Introduction - Wireless Transmission - Frequencies for Radio Transmission - Signals - Antennas - Signal propagation - Multiplexing Modulation - Spread spectrum - Cellular systems.

UNIT-II **9 0 0**

Medium access control - Motivation for a specialized MAC-SDMA-FDMA-TDMA-CDMA. Telecommunication systems -GSM-DECT-TETRA-UMTS and IMT-2000, Satellite systems - Broadcast systems - Data Digital Audio Broadcasting - Digital Video Broadcasting.

UNIT-III **9 0 0**

Wireless LAN - Infrared vs. Radio Transmission - Infra structure and ad hoc Networks - IEEE 802.11 - HIPERLAN - Bluetooth. Wireless ATM - WATM Services - Reference Model - Functions - Radio Access Layer - Handover - Location Management - Addressing - Mobile Quality of Service - Access Point Control Protocol.

UNIT-IV **9 0 0**

Mobile network layer - Mobile IP - Dynamic host configuration protocol - Ad hoc networks-Routing Algorithm-Mobile transport layer - Traditional TCP - Indirect TCP - Snooping TCP, Mobile TCP - Fast Retransmit /Fast Recovery - Transmission/Timeout Freezing, Selective Retransmission - Transaction Oriented TCP.

UNIT-V **9 0 0**

Support for Mobility - File systems - Consistency - World wide web - Hyper Text Transfer Protocol - Hypertext markup language –Next generation- Wireless Application Protocol.

TEXT BOOK:

1. JOCHEN SCHILLER, Mobile Communications - Addison Wesley 2000.
- 2.Blake, Wireless Communication Technology-Thomson Learning-2002

Reference:

- 1.THEODORE S.RAPPAPORT, Wireless Communication: Principles and practice, -Prentice Hall Communication Engineering and Emerging Technologies Series

BCSE15	PARALLEL PROCESSING	3	0	0	3
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UNIT I

9 0 0

Parallel Computer Models: Multiprocessors and Multi computers – Multi vector and SIMD Computers - PRAM and VLSI models - Program and Network properties - Program Flow Mechanism - System Interconnection Architectures - Parallel processing Applications - speedup performance.

UNIT II

9 0 0

Hardware Technologies: Processor and Memory Hierarchy: Advanced processor Technology – Super scalar and Vector Processors - Memory Hierarchy Technology - Virtual Memory Technology - Bus, Cache and Shared Memory organization.

UNIT III

9 0 0

Processor Development Techniques: Linear Pipeline Processors - Non-linear pipeline processors - Instruction pipeline Design: Introduction Execution Phases, Mechanism for Instruction pipelining, dynamic instruction scheduling - Arithmetic pipeline design: Computer Arithmetic principles, Multifunctional Arithmetic pipelines – Super scalar and super pipeline design.

UNIT IV

9 0 0

Parallel and Scalable Architectures: Multiprocessor system interconnection - Cache coherence and synchronization mechanisms: The Cache Coherence Problem, Snoopy Bus Protocols, Directory - based protocols - Message - passing mechanisms – multi vector multiprocessors - compound vector processing - SIMD computer organizations - Principles of multithreading - Fine-grain multi computers - Scalable and multithreaded Architectures.

UNIT V

9 0 0

Parallel Programming Software: Parallel programming models - parallel languages and compilers - dependence analysis of data arrays - code optimisation and scheduling - parallel programming environments - multiprocessor UNIX design goals - master-slave and multithreaded UNIX - multicomputer UNIX extensions.

TEXT BOOKS :

1. Kai Hwang, "Advanced Computer Architecture - Parallelism, Scalability, Programmability", McGraw Hill, 1993.

REFERENCE BOOKS :

1. Kai Hwang and Faye A Briggs, "Computer Architecture and Parallel Processing", McGraw Hill, 1985.

2. Michel J. Quinn, "Parallel Computing Theory and Practice", McGraw Hill, 1994.

3. Joel M. Crichlow, "An Introduction to distributed and parallel computing", 2nd Edn., PHI, 1997.

4. Kogge P.M, "The architecture of pipelined computers", McGraw Hill, 1981.

BCSE17	BIO - INFORMATICS	3	0	0	3
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Unit I Coding

9 0 0

Common Health Care language – Coding techniques – Coded and quasi Coded Data – Medical Vocabulary – Industry Wide communication Standards HL7 – Unified Medical Language System - quality of Care paradigms, Risk Management Bioethics.

Unit II Information Networks

9 0 0

Internet – Facilities used in the Internet web Browsers STTP5, HTTP, HTML, and URL – European Molecular Biology Network – National Centre for Bio-technology Information.

Unit III Patient Record Maintenance

9 0 0

Electronic Patient Record – Models or ERP – Environmental Services – Metrics – Telemedicine – Community Networks – telemedicine Peripherals and equipment Selection – Anatomy of video Conferencing Technology.

Unit IV Protein Information Resources

9 0 0

Biological Data Basics – Primary Secondary Data Basics – Protein pattern Data basics DNA Sequences – Interpretation of EST Structures – Different Approach to EST Analysis.

Unit V Alignment Techniques

9 0 0

Data Base Searching – Comparison of Two Sequences – Identity and Similarity – Global and Global Similarity – Global and Local Alignment – Multiple Alignment – Secondary Data Base. Expert System: Principles of Expert System – Statistical Decision Trees – integration of Decision Support in Clinical Processors. Genome project.

TEXT BOOK:

1. T.K.Attwood and D.J.Perry – Smith, Introduction to Bio – Informatics, Longman, Essex.1999.

REFERENCE BOOK:

1. Coiera E, Guide to Medical Informatics, The Internet and Telemedicine, Chajzman & Hall Medical, London 1997.
2. Bernser, E.S.Clinical Decision Support Systems, Theory and practice, Springer – Verlag, New York, 1999.

BCSE19	THEORY OF COMPUTATION	3	0	0	3
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Unit I Regular Languages

9 0 0

Finite State systems - Basic Definitions - Finite Automation - DFA & NFA - Finite Automaton with ϵ -moves - Regular Expression - Equivalence of NFA and DFA - Equivalence of NFA's with and without ϵ -moves - Equivalence of finite Automaton and regular expressions - Pumping Lemma for Regular sets - Problems based on Pumping Lemma.

Unit II Context Free Languages

9 0 0

Context Free Grammars - Derivations and Languages - Relationship between derivation and derivation trees - ambiguity - simplification of CEG - Greiback Normal form - Chomsky normal forms - Problems related to CNF and GNF.

Unit III Pushdown Automata

9 0 0

Definitions - Moves - Instantaneous descriptions - Deterministic pushdown automata - Pushdown automata and CFL - pumping lemma for CFL - Applications of pumping Lemma.

Unit IV Turing Machines

9 0 0

Turing machines - Computable Languages and functions - Turing Machine constructions - Storage in finite control - multiple tracks - checking of symbols - subroutines - two way infinite tape.

Unit V Undecidability

9 0 0

Properties of recursive and Recursively enumerable languages - Universal Turing Machines as an undecidable problem - Universal Languages - Rice's Theorems.

Text Book

1. J.E.Hopcroft and J.D.Ullman, "Introduction to Automata Theory, Languages and Computation", Narosa Publishers, 2002.

References

1. Michael Sipser, "Introduction to the Theory of Computation", Brooks/Cole Thomson Learning, 1997.
2. J.C.Martin, "Introduction to Languages and Theory of Computation", McGraw Hill, 2002.
3. Ragade, "Automata and Theoretical Computer Science", Pearson Education, 2004
4. Mishra & Chandra sekaran Theory of Computer Science- Automata, Languages & Computation, Second edition, PHI, 2000

BCSE21	NATURAL LANGUAGE PROCESSING	3	0	0	3
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UNIT I

9 0 0

Introduction – The issues and difficulties in natural language processing – Linguistics and computational linguistics – Language understanding and generation – Understanding of spoken, written and textual information.

UNIT II

9 0 0

Syntactic Parsing – English grammar – Structure of the sentence – Words and organization of the lexicon – Context free and context sensitive grammar – Transformational grammar – The role of syntax analysis in semantics ATN's – Definite clause grammar and WASP Parsers.

UNIT III

9 0 0

Semantic interpretation – The conceptual dependency model for semantic representation – semantic networks – Frames and scripts – Semantics in the lexicon.

UNIT IV

9 0 0

Discourse interpretation – The interconnections between pragmatics – Pragmatics in discourse analysis – Speech acts plan – based Theory of speech acts – Semantic network Frame and scripts – Semantics in the lexicon.

UNIT V

9 0 0

Generation – Strategies for generation – Planning English referring expressions- KING, a Natural language generation systems.

Typical systems – ELIZA – Baseball – GUS – PARRY – LADDER – SOPHIE & POET current trends in NLP.

TEXT BOOK:

1. James Allen Benjamin Cummings, "Natural language understanding", Pearson Education 2003.

REFERENCE BOOKS:

1. Grosz, Jones & Webber, Readings in Natural Language Processing, Morgan Kaufmann Publishers, 1986.
2. Windgrad, language as a Cognitive process; Syntax, Addison Wesley Publication, 1983.

BCSE23	VISUAL PROGRAMMING	3	1	0	4
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UNIT-I

9 3 0

Introduction to Windows Programming: GUI Concepts – Overview of Windows programming – Creating the window – Displaying the window – message Loop – windows procedure – WM_PAINT message – WM_DESTROY message – An Introduction to GDI – Scroll Bars – Keyboard – Mouse – Menus.

UNIT-II

9 3 0

Visual Basic Programming: IDE – First Visual Basic Program – Introduction to Forms – Intrinsic Controls – Working with Files – Accessing Databases with Data Control – Classes and Objects – ADO Object Model.

UNIT-III

9 3 0

Visual C++ Programming: Windows Programming Model – Visual C++ Components – Microsoft Foundation Classes Library Application Framework – Getting Started with Appwizard – Basic Event Handling, Mapping Modes, and a Scrolling view – Graphics Device Interface, Colors and Fonts – Modal Dialog and Windows Common Dialogs – Modeless Dialog and Windows Common Dialogs – Using ActiveX Controls – Windows Message Processing and Multithreading.

UNIT-IV

9 3 0

Advanced Concepts: Menus – Keyboard Accelerators – Rich Edit Control – Tool Bars – Status Bars – A Reusable Frame Window Base Class – Reading and Writing Documents – SDI and MDI Environments – Splitter Windows and Multiple Views.

UNIT-V

9 3 0

Applications of Windows Programming: Dynamic Link Library – Component Object Model – Object Linking and Embedding – Data Base Management with Microsoft ODBC.

TEXT BOOKS:

1. Charles Petzold, "Windows Programming", Microsoft Press, 1996. Chapters: 2,5,6,9,10.
2. Francesco Balena, "Programming Microsoft Visual Basic 6.0", Microsoft Press, Indian Reprint, 2001. Chapters: 1,2,3,5,6,13.
3. David Kruglirski.J, "Programming Microsoft Visual C++", Fifth Edition, Microsoft Press, 1998, Chapters: 1,2,3,4,5,6,7,8,12,13,14,15,17,18,20,22,24,31.

REFERENCE BOOK:

1. G.Cornell, "Visual Basic 6", Tata McGraw Hill, 1998.
2. Deital & Deital, T.R.Nieto, "Visual Basic 6, How to Program", Prentice Hall of India, 1999.

BCSE25	PATTERN RECOGNITION	3	0	0	3
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UNIT-I

9 0 0

Fundamentals of Pattern Recognition: Basic concepts of pattern recognition - Decision theoretic algorithms - Structural pattern recognition.

UNIT-II

9 0 0

Introductory Neural Networks : Artificial Neural Network structures - Supervised training via error back propagation: derivations.

UNIT-III

9 0 0

Advanced Fundamentals of Neural Networks:

Acceleration and Stabilization of supervised gradient training of MLPs - Advances in Network Algorithms for classification and recognition - Recurrent Neural Networks.

UNIT-IV

9 0 0

Neural, Feature, and Data Engineering: Neural Engineering and Testing of FANNs - Feature and Data Engineering.

UNIT-V

9 0 0

Testing and Applications: Some comparative studies of forward artificial Neural Networks - Pattern Recognition Applications in texture classification & recognition - Speech recognition - Neural processing of Digital images – Character recognition.

REFERENCE BOOKS:

1. CARAL G. LOONEY, Pattern Recognition Using Neural Networks – Theory and Algorithms for Engineering and Scientists – New York Oxford University Press 1997.

ELECTIVE-V 8TH SEMESTER

BCSE26	E – COMMERCE	3	0	0	3
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UNIT-I Electronic Commerce:

9 0 0

Electronic commerce , Electronic Data Interchange (EDI), Value added networks ,Electronic commerce over internet, PC and networking, Networking, Communication media ,Computer communication system, ISO model ,X.400 message handling system ,Internet E-mail,E-mail security , Light weight directory access protocol ,Internet -Introduction ,communication protocols ,Internet Search , Internet 2, Intranet -Introduction ,services.

UNIT-II EDI:

9 0 0

EDI-Introduction ,Cost and benefits ,Components of EDI system, Implementation issues ,UN/EDIFACT standard -Introduction ,an EDIFACT message, Interchange Structure ,message directories ,EDI over internet ,commerce over extranets , Identification and tracking tools for electronic commerce.

UNIT-III Technology and Security Issues:

9 0 0

Technology issues -Bandwidth issues , Technology issues for the internet ,NNI Standard, NII services , NII agenda ,GII , security issues ,Security concerns , Security solutions , Electronic cash over the internet , Internet security ,Guide lines for cryptography policy.

UNIT-IV Reengineering:

9 0 0

Business process reengineering , Approach for BPR, Strategic alignment model, BPR methodology ,Change management , Change management in public administration, Implementation plan , Legal issues, Risks-Paper document versus electronic document, Technology for Authenticating an electronic document, Laws for e-commerce, EDI interchange agreement.

UNIT-V Case Studies:

9 0 0

EDI in Indian customs ,US electronic procurement, Banks , Automotive industry, SNS, E-Commerce in India -EDI in India , Internet in India ,Laws for e-commerce in India , UNCITRAL model law on electronic commerce ,Model interchange agreement for international commercial use of EDI.

TEXT BOOK:

1. KAMLESH K.BAJAJ, E-Commerce-Tata McGraw Hill, 2000.
2. KALAKOTA, frontiers of E-commerce”, Pearson education, 2002

REFERENCE BOOOK

1. David Ferris and Larry ripple, “E-business building Intelligence”, 2002
2. Landon,E-Commerce business technology,2004

BCSE28	TOTAL QUALITY MANAGEMENT	3	0	0	3
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Unit I PRINCIPLES OF QUALITY MANAGEMENT

9 0 0

Definitions of quality, quality philosophies of deming, crossby and miller, service vs. product quality, customer focus quality and business performance leadership for quality management, quality planning, designing for quality and manufacturing for quality, vision, mission statements, quality policy.

Unit II TOTAL QUALITY MANAGEMENT

9 0 0

Evolution of TQM, TQM models, human and system components for continuous improvement strategies, Deming wheel, internal external customer concepts, customer satisfaction index, customer retention, team work and team building, empowerment, TQM culture, quality circle, 5 s principles, top management commitment and involvement.

Unit III QUALITY MANAGEMENT TOOLS FOR BUSINESS APPLICATION

9 0 0

Principles and applications of quality functions deployment, failure mode and effect analysis, taguchi techniques, 7 old QC tools, 7 new management tools, statistical quality control techniques, mistake proofing, bench marking, 8D methodologies, IT and Kanban.

Unit IV QUALITY IMPERATIVE FOR BUSINESS IMPROVEMENTS

9 0 0

Dimensions of quality, reliability prediction analysis, total productive maintenance, cost of quality, business process re-engineering, process capability analysis, quality assurance and ISO 9000 and QS 9000 certifications.

Unit V TQM IMPLEMENTATION STRATEGIES

9 0 0

Organizational structures and mind set of individuals, motivational aspects of TQM, change management strategies, training for TQM, TQM roadmap, quality improvement index.

TEXT BOOKS:

1. ROSE J.E "TOTAL QUALITY MANAGEMENT", KOGAN PAGE INDIA (P) LTD. 1993.

REFERENCE BOOKS:

1. WILLIAM J. KOLARIK, "CREATING QUALITY", McGraw Hill Inc, NY, 1995.

2. JILL A. SWIFT, JOEL E. ROSS AND VINCENT K. OMACHONU, "PRINCIPLES OF TOTAL QUALITY", ST. LUCIE PRESS, US, 1998.

3. SAMUEL K. HO, TQM, AN INTEGRATED APPROACH, KOGAN PAGE INDIA (P) Ltd. 2002

4. DALE H. BESTERFIELD et al, TOTAL QUALITY MANAGEMENT, Pearson education Asia, 2001.

BCSE30	MAIN FRAME COMPUTING	3	0	0	3
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Unit 1 MVS CONCEPTS:

9 0 0

MVS overview-system initialization-storage management-job management-managing work-data management-I/O processing-termination and recovery.TSO commands-general syntax of JCL statements

Unit II JCL AND VSAM :

9 0 0

Explanation of job statements-explanation of EXEC statements-explanation of DD statements-additional parameters on JOB,EXEC,DD statements-classification-instream and catalog procedures-utilities-abend codes.VSAM data set organization structure-IDCAMS commands-JCL for VSAM-buffering-alternative index-repro-backup and recovery-export and import.

Unit III COBOL/370 :

9 0 0

Structured programming constructs-fundamentals of COBOL-data definition-conditional statements-perform statements-compiler option-table definition-COBOL call and parameter passing-file handling.

Unit IV DB2 :

9 0 0

RDBMS concepts-structural query language-normalisation-DB2 architecture-DB2 objects-locks-program preparation-cursors-null indicators-optimizer-utilities.

Unit V CICS :

9 0 0

CICS introduction-terminal control-application house keeping-EXEC,interface locks-supply transactions –CESM,CESF,CEMT,CEDF-NMDS-BMS-abend codes-file control-program control-TSQ-TDQ-pseudo conversation-recovery and roll back.

TEXT BOOK

1.DOUGLOWE ,”MVS”,MIKE MURACH ASSOCIATES 1994.

2.CHANDAR RAND “JCL”,MCGRAW HILL 1994.

REFERENCE BOOKS

1.GARY D.BROWN AND S.A.M SMITH “MVS/VSAM FOR THE APPLICATION PROGRAMMER”,JOHN WILEY AND SONS 1993.

2.M.K. ROY AND D.GOSH DASTIDAR “COBOL PROGRAMMING”,JOHN WILEY AND SONS, 1996.

3.STERN & STERN “STRUCTURED COBOL PROGRAMMING” ,JOHN WILEY AND SONS, 1996.

4. MULLENS,”DB2 DEVELOPER’S GUIDE” , SAM PUBLISHING, 1997.

5.C.J.DATE “DB2”

BCSE32	ADVANCED DATABASES	3	0	0	3
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UNIT I **9 0 0**

Introduction:

Review of Relational Databases – Database Tuning – Advanced Transaction Processing.

UNIT II **9 0 0**

Distributed Databases:

Introduction – Architecture- Design – Query Processing – Transaction Management – Concurrency Control – Recovery – Parallel Databases.

UNIT III **9 0 0**

Object Oriented Databases:

Introduction - Basis OO Concepts – Modeling and Design for Object Oriented Databases – Persistence – Transaction, Concurrency, Recovery and Versioning.

UNIT IV **9 0 0**

Special Purpose Databases:

Temporal Databases – Active Databases – Spatial and Multimedia Databases – Deductive Databases – Mobile Databases.

UNIT V **9 0 0**

Current Trends :

Data Warehousing – OLAP – Data Mining Techniques – Databases and the World Wide Web – Decision Support System.

Text Books :

- 1.M. Timer, Ozu and Patrick Valduriez, “Principles of Distributed Database System”, PHI, 1999. (I,II,III,V unit)
- 2.Abdullah Uz Transelet-al, ”Temporal databases”-Theory design and implementation”, Benjamin/Cummings publishing co,1993.(IV Unit)

Reference Books :

1. Jennifer Wisdom & Stefano Ceri (Edited), “Active Database Systems – Triggers & Rules for Advanced Database Processing”, Morgan Kaufmann Publishers Inc., 1996.
2. Setrag Khos Shafian, “Object Oriented Databases”, John Wiley & Sons IC., 1993.
- 3.Setrag Khos shafian,Brad Baker,” Multimedia And Imaging databases”,Morgan Kaufmann,1996.

BCSE34	ATM NETWORKS	3	0	0	3
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UNIT I

9 0 0

Introduction

ATM– Historical Perspectives – Protocol Architecture – Logical Connections- cells Transmission of ATM Cells – SDH – SONET –Switches

UNIT II

9 0 0

ATM Protocols

Connection Setup – Routing Switching, Signaling, ATM Service Categories – QOS Parameters – Adaptive Layer.

UNIT III

9 0 0

Routing Issues

Routing for High Speed Networks – RSVP, Traffic and congestion Control – Traffing Shaping – Generic Cell Rate Algorithms – Rate Based Congestion Control – Connection Admission Control

UNIT IV

9 0 0

High Speed LANS

Fast Ethernet – ATM LANS – Lane

UNIT V

9 0 0

Protocols over ATM

Multiple Protocols over ATM, IP over ATM, TCP over ATM – Real Time Transport Protocol – Wireless ATM – Current Trends.

Text Books:

1. Rainer Handel, Manfred N.Huber, Stefan Schroder, “ATM Networks”, Addison Wesley, 1999.

Reference Books :

1. Uyless Black, “ATM vol.1 & 2”, PHPTR, 1999.

BCSE36	CUSTOM COMPUTING	3	0	0	3
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UNIT I : INTRODUCTION

9 0 0

The Reconfigurability Paradigm – Computing Requirements – Cost Constraints – Introduction to FPGAs, FPGA Design Methodology – Custom Computing Machines.

UNIT II: HARDWARE DESCRIPTION LANGUAGES

9 0 0

VHDL – Programming Concepts – Structural and Behavioral Modeling – Simulation and Synthesis – Design using FPGAs.

UNIT III: CCM ARCHITECTURAL ISSUES

9 0 0

Reconfigurable Data Path - Spatial Computational styles Interconnection – Use Of Partial / Dynamic Reconfigurations – Timing Constraints – Reusability and Sharing of Resources.

UNIT IV: PROGRAMMING FOR CCMS

9 0 0

Methodologies – Styles – Languages – JHDL – Compilers for CCMS – Compilation Techniques for CCMS.

UNIT V: COMPARISON OF CCMS

9 0 0

Performance Issues – Applications – Systems on a Chip Design With FPGAs – Internet Reconfigurability – Current Trends.

TEXT BOOK:

- 1.Arnole I.M.etal, Field Programmable Custom Computing Technology- Architecture, Tool & Applications, Kluwer, 2000.

REFERENCE BOOKS:

- 1.Z.Navabi, “VHDL Analysis and Modeling of Digital Systems”, McGraw – Hill, 1998.
- 2.Douglas Perry, “ VHDL”, McGraw – Hill, 1998.

ELECTIVE-VI 8TH SEMESTER

BCSE40	FAULT TOLERANT SYSTEMS	3	0	0	3
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UNIT I: Introduction

9 0 0

Fault prevention – Fault Tolerance – Anticipated and Unanticipated faults – Test Generation for Digital Systems – Combinational Logic. Network Boolean Difference Method Test Generation for Sequential Circuits – Fault Simulation.

UNIT II: Error Model

9 0 0

General Coding Scheme – Parity Checking Code – Arithmetic Code - Code for Computer Memories – Checking Errors in Logical operation – Communication Coding.

UNIT III: Fault Tolerance

9 0 0

Coding Technique – Fault Tolerant Self-Checking and Safe Circuits – Ault Tolerant in Combinational and Sequential Circuits – Synchronous and Asynchronous Fail Safe Circuits.

UNIT IV: Architecture

9 0 0

Fault Tolerant computers – General Purpose Commercial Systems – Fault Tolerant Multiprocessor and VLSI Based Communication Architecture.

UNIT V : Fault Tolerant Software

9 0 0

Design – N - version programming Recovery Block – acceptance Tests – Fault trees – Validation of Fault Tolerant Systems.

TEXT BOOKS:

1. K.K.Pradhan, Fault Tolerant Computing Theory and Techniques Volume III.Prentice Hall, 1989.
2. Anderson and Lee, Fault Tolerant Principles and Practice.PH 1989.

REFERENCE BOOKS:

1. Kanad Chakraborty, Pinaki Mazumder, “Fault Tolerance And Reliability Techniques For High Density Random- Access Memories”, Pearson Education 2003

BCSE42	SOFT COMPUTING	3	0	0	3
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UNIT I: Neuro – Fuzzy and Soft Computing

9 0 0 Introduction to

Fuzzy Sets – Fuzzy Rules and Fuzzy Reasoning and Inference – System Identification – Several Methods – Optimization Techniques- Derivative-based and Free Optimization.

UNIT II: Neural Network

9 0 0

Network Inputs and Outputs – Feed back Inter Connections and Network Stability – Feed Forward Networks – Adaptive Networks – Supervised Learning Neural Networks – Self Organizing maps – adaptive Resonance Architectures – Radial Basis Networks.

UNIT III: Fuzzy System Design

9 0 0

Compositional Rules of Inference in Fuzzy System – Defuzzification Strategies Neural Component of a Fuzzy System – Fuzzy neural Network Controllers – Adaptive – Networks based Fuzzy Inference System.

UNIT IV: Advanced Neuro – fuzzy modeling

9 0 0

Classification and Regression Tests – data Clustering Techniques and Algorithms – Rule base Structure Identification.

UNIT V: Artificial Neural networks hardware

9 0 0

Implementation Issues – Evaluation of Neural network Architectures – Hardware Realization – VLSI approach – Optical techniques.

TEXT BOOK:

1. Jyh-shing roger Jang, Chnesy-tasi sur, Eiji Miziltazui, “ Neuro and Soft Computing: A Computational Approach to Learning and machine Intelligence”, PHI, 1998.

REFERENCE:

1. Robert J Schalkff, “ Artificial Neural Networks”, McGraw Hill, 1997.
2. Timothy J.rass, “ Fuzzy Logic with Engineering Application”, McGraw Hill, 1997.

BCSE44	ROBOTICS	3	0	0	3
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UNIT –I **9 0 0**

The scope of Industrial Robotics – Definition of an Industrial Robot – Need for Industrial Robots – Applications – Fundamentals of Robot Technology – Automation and Robotics – Robot Anatomy – Work Volume – Precision of Movement End Effectors – Sensors.

UNIT– II **9 0 0**

Robot Programming – Methods – Interlocks Textual Languages – Characteristics of Robot Level Languages – Characteristics of Task Level Languages.

UNIT – III **9 0 0**

Puma Robot Arm Control – Computed Torque Technique – Near Minimum Time Control – Variable Structure Control – Non-linear Decoupled Feedback Control – Reserved Motion Control – Adaptive Control.

UNIT– IV **9 0 0**

Robot Cell Design and Control – Remote Center Compliance – Safety in Robotics.

UNIT – V **9 0 0**

Advanced Robotics, Advanced Robotics in space – Specific features of Space Robotics Systems – Long Term Technical Developments – Advanced Robotics in Underwater Operations – Robotics Technology of the Future - Future Application.

Text Book:

1. Barry Leatham Jones, “Elements of Industrial Robotics” Pitman Publishing, 1987.

Reference Books:

1. Mikell P.Groover, Mitchell Weiss, Roger N.Nagel, Nicholas G. Odrey, “Industrial Robotics Technology, Programming And Applications”, McGraw Hill Book Company, 1986.
2. Asfahl C.R. “Robots and Manufacturing Automation”, 2nd edition, Wiley 1990.

BCSE46	REALTIME SYSTEMS	3	0	0	3
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Unit 1 INTRODUCTION

9 0 0

Architecture of real time systems/embedded systems-operating systems issues-performance measures-estimating program run times

Unit II TASK ASSIGNMENT AND SCHEDULING

9 0 0

Uniprocessor scheduling-IRIS tasks-task assignment mode charges –fault tolerance scheduling

Unit III PROGRAMMING LANGUAGES AND TOOLS

9 0 0

Desired characteristics based on ADA-data typing-control structures-packages-exception handling-overloading-multitasking-timing specification-task scheduling-just in time compilation-run time support.

Unit IV REAL TIME DATABASES

9 0 0

Basic networking principles-real time databases –transaction processing-concurrency control-disk scheduling algorithms-serialization and consistency.

Unit V

FAULT TOLERANCE, RELIABILITY AND SYNCHORNIZATION 9 0 0

Fault types-fault detection and containment-redundancy-data diversity-reversal checks-obtaining parameter values-reliability models for hardware redundancy-software error models-clocks-fault tolerance synchronization-synchronization and software.

TEXT BOOKS:

1.C.M.KRISHNA, KANG.G.SHIN, REAL TIME SYSTEMS, McGraw Hill 1997.

REFERENCE BOOKS:

1.RAYMOND J.A. BUHR –AN INTRODUCTION TO REAL TIME SYSTEMS FROM DESIGN TO NETWORKING C AND C++, Prentice Hall 1999.

BCSE48	MAN MACHINE & INTERFACE	3	0	0	3
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UNIT I: Human Factors of Interactive Software, Theories & principles 9 0 0

Introduction, Goals of system Engineering, Goals of User – Interface Design, Motivations for human factors for design, accommodation of human diversity, Goals for profession, High level theories, Object – action interface mode, Recognize the diversity, Eight golden rules of interface design, Prevent errors, Guidelines for Data Display, for data Entry.

UNIT II: Design Process and Expert Review 9 0 0

Organizational design to support usability, Three pillars of design, Development methodologies, Ethnographic observation, participatory design Scenario development, Expert reviews, Usability testing, Surveys, Acceptance tests, Evaluation during active use.

UNIT III: Tools and Environment 9 0 0

Specification methods, Interface – building tools evaluation and critiquing tools, Examples of direct manipulation system, Explanation of direct manipulations, Visual Thinking and icons – Direct manipulation Programming, Home automation, remote direct manipulation, Virtual Enviornments, Menu selection, Form filling and Dialog boxes.

UNIT IV: Command and Natural Languages, Interaction Devices 9 0 0

Functionality to support users tasks, Command – Organization strategies, benefits of structure, naming and abbreviations, Command menus, Natural language in computing, Interaction devices - Keyboard and function keys, Pointing devices, Speech recognition, Digitization and generation, Image and video displays, printers.

UNIT V: Response Time and Presentation Styles 9 0 0

Theoretical foundations, Expectations and attitudes, User productivity, variability, error messages, Non-anthropomorphic design, Display design, Color, Printed manuals, Online help and tutorials, Multiple window strategies.

TEXT BOOK:

1. BEN SHNEIDERMAN, Designing the User Interface – 3rd Edition. Pearson Education 1998.

REFERENCE BOOK:

1. John M. Carroll, “Human –Computer Interaction in the new millennium”, Pearson Education 2002

BCSE50	MANAGEMENT INFORMATION SYSTEMS	3	0	0	3
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UNIT I INTRODUCTION

9 0 0

Definition of MIS - Data Processing, Decision Support Systems - Information Resource Management, End User Computing Management, End User Computing Managerial Accounting, Or Management Theory, Sub-Systems of MIS. Data Base Query Languages, Report Generators, Statistical packages, modelling languages, V.H.L. Languages. Batch System, Online systems. Communication systems, Front End Processors, LAN, WAN, Distributed Systems.

UNIT II

9 0 0

Logical Data Concepts, Sequencing of Data, Types of files, data bases. Serial Access and Direct Access Devices. Sequential, Hashed and Indexed File Organization- Data Base Organizations - Single Flat File - Hierarchical, Network, Relational DB Structures. Transaction Processing - Controls and retrieval. Word and Text Processing, Document filing, Computer graphics, Composition and Reproduction, Document Distribution, Facsimile transmission, Message Systems, Information Processing Control - Availability Controls.

UNIT III

9 0 0

Decision making process - Problem Formulation - Programmed vs Non-programmed decisions - Criteria for Decision making - Classical Economical Model - Administrative model - Resolution of Conflict - Uncertainty avoidance - Problematic search - Incremental Decision Making - Optimization Techniques under certainty. Pay off Matrices - Decision Trees - Game Theory - Statistical inference - Documenting and Communicating Decision Rules - Support for decision making phases.

UNIT IV

9 0 0

Hierarchy of Information - Redundancy - Sending and receiving efficiency - Utility of information - Errors and Bias - Value of information and Sensitivity Analysis - Information System Design. Types of Systems - Subsystems - Preventing Subsystem entropy - System Stress - Organizational efficiency and effectiveness. Use of subsystems in Informational System Design - Decoupling of Information Systems - Project management.

UNIT V

9 0 0

Hierarchy of Planning - Planning of models - Computational Support for planning - Organizational Structure Implications and Management Theory in System Design - Decision Support Systems and Expert Systems - Computational Support for Intelligence, Design and Choice phases - Spread sheet processor - Analysis package - Model Generator - Planning Software Systems - Data base Query Systems for planning.

TEXT BOOKS :

1. Gordon B. Davis and Margrethe H. Olson, Management Information Systems, -McGraw Hill Editions - Second Edition 1988.

REFERENCE BOOKS :

1. Robert G. Murdick, Joel E. Ross and James R. Claggett, Information Systems for Modern Management, 33rd Edition 1992, Prentice Hall of India (P) Ltd. - Eastern Economy Edition.
2. Jerome Kanter, Management Information Systems, 3rd Edition, 1990. Prentice Hall of India Ltd., Eastern Economy Edition

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u & Charles Marut, “Assembly Language Programming and Organization of the IBM PC”, TMH, 2004.

4. Douglas V Hall, Microprocessors and Interfacing. Programming and Hardware. Tata McGraw Hill Pub.Ltd

