List of subjects identified for the above course:

**Semester No: 3**

**Theory:**

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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 BCS221 offered as per the previous syllabus.

**Semester No: 4**

**Theory:**

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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

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Semester No: 6

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Subtotal: 25

### Semester No: 8

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Subtotal: 15

Total Credits: 135
### List of Electives

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Unit I. Laplace Transforms

Unit II. Complex variables

Unit III. Complex Integration
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

Unit V. Design of Experiments
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 (CBD) – Randomized block Design(RBD) - Efficiency of RBD over CRBD – Estimation of missing value by RBD – Latin square Design (LSD)

Text Books:

Reference:
Unit I Semiconductor devices

Unit II Amplifiers
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
Negative feedback-Effect-Types-positive feedback-Berkhausen criteria-Oscillators-RC Phase shift-Wein Bridge-Hartley-Collpit’s –analysis

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

Unit V Mulivibrators and Timers
555 Timer-Block diagram-Monostable-Bistable and Astable, multivibrator using 555

Text Book:
2. David A. Bell “Electronic Devices and Circuits”, Prentice Hall of India

References:
1. Milman and Halkias “Integrated Electronic”, TMH, 1985
2. Boylestad Nashelsky, “Electronic Devices and Circuit theory”, PHI
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<tr>
<td>Unit I</td>
<td>Linear Data Structures</td>
<td></td>
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<tr>
<td></td>
<td>Stacks, Queues &amp; Lists Implementation and Applications, Singly linked list-Doubly linked lists.</td>
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<td>Unit II</td>
<td>Nonlinear Data Structures</td>
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<td>Trees – Binary Trees – Binary Search Tree – Tree Traversals – AVL Trees</td>
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<td>Unit III</td>
<td>Algorithm Analysis</td>
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<td>Sorting and searching – space complexity-time complexity-Big Oh-Binary Searching-analysis-Quick sort-Heap sort-Merge sort-Analysis</td>
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<td>Unit IV</td>
<td>Graph algorithms</td>
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<td>Graph operations-DFS-BFS-Minimum cost spanning tree-Krushkal’s algorithm-Prim’s Algorithm</td>
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<tr>
<td>Unit V</td>
<td>Algorithm Design Methods</td>
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</tbody>
</table>

**Text Book:**

**References:**
Unit I INTRODUCTION
Programming methodologies-Comparison-Object Oriented concepts-Basics of C++ environment.

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

Unit IV TEMPLATES
Class templates-Function templates-Exception handling-Streams.

Unit V JAVA PROGRAMMING
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:

References:
Unit 1 Logic 9 3 0


Unit II Combinatorics 9 3 0


Unit III Groups 9 3 0


Unit IV Lattices 9 3 0


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:
Unit I  DC CIRCUITS 930

Unit II  AC CIRCUITS 930
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 930

Unit IV  TRANSFORMERS 930

Unit V  SYNCHRONOUS MACHINES AND INDUCTION MOTORS 930

Text Books:

Reference Books:
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 |

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

<table>
<thead>
<tr>
<th>BMA202</th>
<th>MATHEMATICS – IV</th>
<th>3</th>
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<th>0</th>
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</thead>
</table>

**Unit 1 Fourier series**


**Unit II Fourier Transforms**


**Unit III Partial Differential Equations**

- 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 IV One Dimensional Wave Equation and Heat Equation**


**Unit V Two Dimensional Heat Equations**

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

**Text Book:**


**Reference:**

Unit I  Number systems
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
Boolean algebra – De Morgan’s law - Simplifications of Boolean expression – Sum of products and product of sums – Karnaugh Map – Quince McClusky method of simplification (Including Don’t care conditions)

Unit III  Combinational logic

Unit IV  Sequential logic design
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
Characteristics of RTL, DTL, TTL, families – Schottky, clamped TTL, ECL, IIL – Mos Inverters – complementary Mos inverters

Text Books:

Reference:
Unit 1 Introduction:

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

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

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

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

Database system architecture - Client server system - Centralized systems - Parallel systems - Distributed system - Distributed databases.

Textbook:

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

UNIT – II

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

UNIT – IV

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

TEXT

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

Unit II Problem solving
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
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
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
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

Reference:
Unit I Introduction

Unit II Transformation

Unit III Clipping & Windowing
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
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
Introduction - Multimedia applications - Multimedia system architecture - Objects for multimedia systems - Compression and decompression - Types of compression - Binary image compression schemes - JPEG/MPEG

Textbook:

Reference:
PRACTICALS

<table>
<thead>
<tr>
<th>BCS222</th>
<th>DBMS LAB</th>
<th>0</th>
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<th>1</th>
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</thead>
</table>

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.
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
Students are directed to attend training in a company and should submit a report at the beginning of V semester.
### FIFTH SEMESTER

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>BCS301</td>
<td>SYSTEM SOFTWARE</td>
<td>3 1 0 4</td>
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</tbody>
</table>

#### Unit I  INTRODUCTION  
Basic concepts-Machine structure- Instruction formats – Addressing modes – Typical Architectures.

#### Unit II  ASSEMBLERS  

#### Unit III  LOADERS and LINKERS  

#### Unit IV  MACROPROCESSORS  

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

**Text Book:**

**Reference:**
Unit 1  INTRODUCTION
Basic structure of Computer Hardware-Von-Neumann Architecture-Functional units-Instruction formats and types-Addressing modes.

Unit II  ARITHMETIC AND LOGIC UNIT
Fixed point arithmetic operation-addition, subtraction, multiplication, division-Floating point arithmetic operation-Design of ALU-Bit-slice processors.

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

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

Unit V INPUT/OUTPUT AND PERIPHERALS
Basic concepts-programmed I/O-Interruptions and DMA-I/O processors-input devices-display devices-printers magnetic disk drives-optical drives.

Text Books:

References:
UNIT I JAVA BASICS REVIEW

UNIT II ADVANCED NETWORKING AND BEANS

UNIT III JAVA DATABASE PROGRAMMING

UNIT IV WEB BASED JAVA
Servlets, EJB, JBuilder, JNI, Struts

UNIT V RELATED JAVA TECHNIQUES

Text books:

Reference Books:
Unit I Introduction: 9 0 0

Unit II Process Management: 9 0 0

Unit III Synchronization and Deadlocks: 9 0 0

Unit IV Memory Management: 9 0 0

Unit V Files and Secondary storage Management: 9 0 0

Text Book:

Reference:
Unit I


Unit II


Unit III


Unit-IV


Unit V


TEXT BOOK


REFERENCES

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

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

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

Unit IV
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
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:

References:
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
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.
4. Data Acquisition System.
5. Floppy Disk Drive, Hard Disk Drive Mechanism
Unit 1 Introduction

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:

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 III Network layer

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

Unit IV Transport layer

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

Unit V Application layer

Domain name system - Electronic mail - World Wide Web - Multimedia - Cryptography, Digital

TEXT BOOK:

REFERENCES:
Unit I

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

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

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

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

TEXT BOOK

REFERENCE BOOK:
Software Required: C/C++/VC++/JDK1.3/JSDK
UNIT I INTRODUCTION TO HTML

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.


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

UNIT II Site Delivery & XML:

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

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

UNIT IV

Web Server (Tomcat) and Servlet

UNIT V

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

TEXT BOOK:

Unit I SIGNALS & SYSTEMS


Unit II Z TRANSFORM & REALISATIONS


Unit III DFT & FFT

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

Unit IV DESIGN OF DIGITAL FILTER


Unit V EFFECTS OF FINITE REGISTER LENGTH

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

TEXT


REFERENCE:

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.
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.
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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BCS403</td>
<td>.NET FRAMEWORK</td>
<td>3 1 0 4</td>
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</table>

UNIT 1

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

UNIT II C#.NET

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


UNIT IV ADO.NET

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

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

Text Book:
4. Basuria, Batongbcal, Bohling, Clark, “Professional ASP.NET and Web services”, Wiley publication

Reference Book:
UNIT I 9 0 0

UNIT II 9 0 0

UNIT - III 9 0 0

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:

REFERENCE:
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

Unit V - Data visualization and overall perspective
Tools-Applications-Data visualization Techniques– Case Study

Text Book:

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
UNIT –I
• Review the amount of information being created and understand the value of information to a business
• Identify Data Center infrastructure elements and their requirements • RAID, SCSI, NAS, and SAN.

UNIT – II
Understand role of ILM strategy • List physical and logical components of host, connectivity, and storage • Detail the disk drive architecture and performance • Describe the concept of RAID and different RAID levels (RAID 0, 1, 3, 5, 0+1/1+0, and 6) • Define Intelligent Storage System (ISS) and its components • Implementation of ISS as high-end and midrange storage arrays.

UNIT – III
• Describe the implementation of DAS and overview of SCSI • Define and detail the architecture, components, and topologies of FC-SAN, NAS, and IP-SAN • Understand the object based storage system CAS and its application as long-term archiving solution • Describe block-level and file-level storage virtualization technologies and processes • Overview of emerging technologies such as cloud storage and virtual provisioning

UNIT – IV
• Understand the concept of information availability and its measurement • Describe the causes and consequences of downtime • Define RTO, and RPO • Identify single points of failure in a storage infrastructure and solutions for its mitigation • Describe the backup/recovery purposes and considerations • Discuss architecture and different backup/Recovery topologies • Describe local replication technologies and their operation • Describe remote replication technologies and their operation.

UNIT – V
• Define information security • List the critical security attributes for information systems • Define storage security domains • List and analyze the common threats in each domain • Identify key parameters and components to monitor in a storage infrastructure • List key management activities and examples • Define storage management standards and initiative.

Total No of Hours: 60

TEXT BOOK:
1. EMC Corporation, Information Storage and Management, WileyIndia, 9-Hours788126521470.

Reference Books:
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.
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

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

BMA402 PRINCIPLES OF MANAGEMENT  

Unit I MANAGEMENT AND ITS ENVIRONMENT  

Unit II MANAGEMENT OF ORGANISATION  

Unit III INDIVIDUAL BEHAVIOUR  

Unit IV GROUP DYNAMICS  

Unit V MODERN MANAGEMENT CONCEPTS  

TEXT:
1. JIT.S.CHANDRAN, Organizational Behaviours-Vikas Publishing House Pvt.Ltd.1994

REFERENCES:
| BCS422 | PROJECT (Phase-II) | 0 | 0 | 12 | 6 |
6\textsuperscript{TH} SEMESTER ELECTIVES:

<table>
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<tr>
<th>BCSE02</th>
<th>PRINCIPLES OF PROGRAMMING LANGUAGES</th>
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**Unit I Preliminaries**
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**
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**
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**

**Unit V Concurrency**
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:**
UNIT 1
(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
(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
(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
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
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.
Unit 1 ADVANCED ALGORITHMS  
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  
General methods-typical problems finding the minimum and maximum-strassen’s matrix 
multiplications-convex hull.

Unit III GREEDY METHOD  
General method-Knapsack problem-tree vertex splitting-job sequencing with deadlines.

Unit IV DYNAMIC PROGRAMMING  
General method-0/1 Knapsack-Traveling salesman Problem-Flow shop scheduling.

Unit V BACK-TRACKING & BRANCH AND BOUND TECHNIQUES  
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 Sahni, Sanguthevar Rajashekar, “Computer algorithms”, Prentice Hall of 
India. 1998.  
UNIT I

UNIT II
Buffers- Structures and Representator – Implementation of System Calls.

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

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

UNIT V
Drivers – Streams – Implementation of IPC Mechanism.

Text Books:

Reference Books:
Unit I INTRODUCTION
Definition- Trade and investment flow – economic theories –forms of international business.

Unit II INTERNATIONAL BUSINESS ENVIRONMENT

Unit III ORAL COMMUNICATION
Verbal communication, body language, one to one, one to many, many to many communication, mass media, listening techniques – interview techniques.

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

Unit V GROUP COMMUNICATION
Efficient Group discussion, essentials – role playing team building, integrated communication, in – basket exercise

Text Books:

Reference Books:
Unit I MULTIPROCESSOR OPERATING SYSTEMS  

Unit II NETWORK OPERATING SYSTEMS  
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  

Unit IV Database Operating Systems  
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  
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.
3. Philip Hunter NETWORK OPERATING SYSTEMS-MAKING RIGHT CHOICES Addison Wesley 1995(II unit)

Reference books.
BCSE14 | HIGH PERFORMANCE MICROPROCESSOR | 3 | 0 | 0 | 3

**Unit I  CISC Principles:**
9 0 0

**Unit II  CISC Microprocessor:**
9 0 0

**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

**Unit V  Case Studies:**
9 0 0
Case Studies and Comparison.

**Text Book:**

**Reference Books:**
Unit I SOFTWARE PROJECT MANAGEMENT
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 REQUIREMENT AND SPECIFICATION
Requirement analysis-definition-specification-formal specification-algebraic specification-error specification-model based specification-z schemas-z specification process.

Unit III OBJECT ORIENTED SOFTWARE ENGINEERING
Introduction to object oriented development-architecture-object oriented testing, object oriented metrics-object and productivity-object documentation-MSG case study.

Unit IV SOFTWARE ENGINEERING
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
Integrated environments –platform services-frameworks services-SIE process maturity model-process clarification.

TEXT BOOK:

REFERENCE BOOKS:
Unit I Microcomputer System

Unit II Hardware Components and ICs

Unit III Motherboard Circuits

Unit IV Hard Disk Controller Subsystem-Display Adaptor

Unit V Installation and Preventive Maintenance

TEXT BOOK:

REFERENCE BOOK:

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

UNIT-II  DSS: 
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: 
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: 
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: 
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: 

REFERENCE BOOK: 
UNIT I

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

UNIT II


UNIT III

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

UNIT IV


UNIT V

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

Text Books


Reference Books:

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<th>UNIT-I</th>
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<th>UNIT-II</th>
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<tr>
<td>RPC: Introduction, RPC model, transparency of RPC, Implementing RPC mechanism, Stub generation, RPC messages, Marshalling arguments and results, Sever 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.</td>
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<tr>
<td>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.</td>
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<th>UNIT-V</th>
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**TEXT BOOK**

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

**REFERENCE BOOK:**

ELECTIVE-III 7TH SEMESTER

| BCSE01 | DISTRIBUTED OBJECTS | 3 | 0 | 0 | 3 |

Unit I INTRODUCTION
Objects-distributed objects-historical perspective-distributed objects and computing methodologies.

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

Unit III DEVELOPMENT OF A CORBA APPLICATION:
Client applet-server-IDL contract-database interface.

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

Unit V CURRENT ISSUES:
Internet inter ORB protocol-CORBA-DCOM interoperability issues-CORBA facilities-CORBA domain-CORBA migration process-other distributed object paradigms.

TEXT BOOKS:

REFERENCE BOOKS:
UNIT I: 900
Inter networking issues-routing-internet addressing-address resolution protocol (ARP)-reverse address resolution protocol (RARP)-packet format-routing.

UNIT II: 900
Fragmentation and reassembly-error processing-IP V6-UDP-basic concepts-TCP data structures.

UNIT III: 900
Finite state machine implementation-output processing-timer management-flow control-urgent data processing.

UNIT IV: 900
Core gateway system-autonomous systems and considerations-interior gateway protocols, transparent gateways, DNS.

UNIT V: 900
Sockets-RPC mechanisms-Telnet-Mail systems.

TEXT BOOKS.

REFERENCE BOOKS:
2. STEVENS W.R “TCP/IP ILLUSTRATED VOL I II AND III Addision Wesley 1999
UNIT I

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

UNIT III

UNIT IV

UNIT V

TOTAL: 45

TEXT BOOKS

REFERENCES
<table>
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<tr>
<th>UNIT I</th>
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<tr>
<td>Introduction to Neural Networks – Basic concepts of Neural Networks – Inference and Learning – Classification models – Association models – Optimization models – Self organization models.</td>
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<th>UNIT II</th>
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<td>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.</td>
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<td>Incremental learning - mathematical Modeling - Application of NN - Knowledge based Approaches.</td>
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<th>UNIT V</th>
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<tr>
<td>Structures and sequences - Spatiotemporal NN - Learning Procedures - Knowledge based Approaches.</td>
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**TEXT BOOK:**


**REFERENCE:**

1. JAMES A.FREEMAN and DAVID M.SKAPURA, Neural Networks - 1st ISE Reprint 1999, Pearson education
UNIT – I 9 0 0

UNIT - II 9 0 0

UNIT - III 9 0 0

UNIT - IV 9 0 0

UNIT - V 9 0 0

TEXT BOOK:

REFERENCE BOOK:
UNIT-I Introduction:  

UNIT-II Image Transforms:  
Introduction to the Fourier transform -The Discrete Fourier transform -Some properties of the two dimensional Fourier transform -The fast Fourier transform-Other separable image transforms-The hotelling transform.

UNIT-III Image Enhancement:  
Background -Enhancement by point processing -Spatial filtering-Enhancement in the frequency domains -Generations of the spatial masks from frequency domain specifications-Color image processing -Image Restoration: Degradation Model -Diagonalization 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:  

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

TEXT BOOKS:


REFERENCE BOOKS:

ELECTIVE –IV 7TH SEMESTER

BCSE13 MOBILE AND WIRELESS NETWORKS 3 0 0 3

UNIT-I 9 0 0

UNIT-II 9 0 0

UNIT-III 9 0 0

UNIT-IV 9 0 0

UNIT-V 9 0 0

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
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V
Parallel Programming Software: Parallel programming models - parallel languages and compliers - 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 :

REFERNCE BOOKS :
Unit I Coding

Unit II Information Networks
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

Unit IV Protein Information Resources
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

TEXT BOOK:

REFERENCE BOOK:
Unit I Regular Languages
Finite State systems - Basic Definitions - Finite Automation - DFA & NFA - Finite Automaton with $\varepsilon$-moves - Regular Expression - Equivalence of NFA and DFA - Equivalence of NFA’s with and without $\varepsilon$-moves - Equivalence of finite Automaton and regular expressions - Pumping Lemma for Regular sets - Problems based on Pumping Lemma.

Unit II Context Free Languages
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
Definitions - Moves - Instantaneous descriptions - Deterministic pushdown automata - Pushdown automata and CFL - pumping lemma for CFL - Applications of pumping Lemma.

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

Text Book

References
UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V

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

TEXT BOOK:

REFERENCE BOOKS:
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<td>Concepts – Overview of Windows programming</td>
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<td>– Creating the window – Displaying the</td>
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<td>window – message Loop – windows procedure</td>
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<td>– WM_PAINT message – WM_DESTROY message</td>
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<td>Visual Basic Programming: IDE – First</td>
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<td>Forms – Intrinsic Controls – Working with</td>
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<td>Files – Accessing Databases with Data</td>
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<td>Control – Classes and Objects – ADO Object</td>
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<td>Visual C++ Programming: Windows Programming</td>
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<td>Model – Visual C++ Components – Microsoft</td>
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<td>Foundation Classes Library Application</td>
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<td>Framework – Getting Started with Appwizard</td>
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<td>– Basic Event Handling, Mapping Modes, and</td>
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<td>a Scrolling view – Graphics Device Interface,</td>
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<td>Colors and Fonts – Modal Dialog and</td>
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<td>Windows Common Dialogs – Modeless Dialog</td>
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<td>and Windows Common Dialogs – Using ActiveX</td>
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<td>Controls – Windows Message Processing and</td>
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<td>Bars – Status Bars – A Reusable Frame</td>
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<td>Window Base Class – Reading and Writing</td>
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<td>Documents – SDI and MDI Environments –</td>
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<td>Splitter Windows and Multiple Views.</td>
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<td>Applications of Windows Programming:</td>
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<td>Model – Object Linking and Embedding –</td>
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<td>Data Base Management with Microsoft ODBC.</td>
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**TEXT BOOKS:**

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**UNIT-I**

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

**UNIT-II**

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

**UNIT-III**

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**

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

**UNIT-V**


**REFERENCE BOOKS:**

ELECTIVE-V 8TH SEMESTER

| BCSE26 | E – COMMERCE | 3 | 0 | 0 | 3 |

UNIT-I Electronic Commerce:
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:

UNIT-III Technology and Security Issues:

UNIT-IV Reengineering:

UNIT-V Case Studies:
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:
2. KALAKOTA, frontiers of E-commerce”, Pearson education, 2002

REFERENCE BOOK
2. Landon, E-Commerce business technology, 2004
Unit I PRINCIPLES OF QUALITY MANAGEMENT
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
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, 5s principles, top management commitment and involvement.

Unit III QUALITY MANAGEMENT TOOLS FOR BUSINESS APPLICATION
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, benchmarking, 8D methodologies, IT and Kanban.

Unit IV QUALITY IMPERATIVE FOR BUSINESS IMPROVEMENTS
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
Organizational structures and mind set of individuals, motivational aspects of TQM, change management strategies, training for TQM, TQM roadmap, quality improvement index.

TEXT BOOKS:

REFERENCE BOOKS:
3. SAMUEL K. HO, TQM, AN INTEGRATED APPROACH, KOGAN PAGE INDIA (P) LTD. 2002.
Unit I 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-optimer-utilities.

Unit V CICS : 9 0 0

TEXT BOOK

REFERNCE BOOKS
3.STERN & STERN “STRUCTURED COBOL PROGRAMMING” ,JOHN WILEY AND SONS, 1996.
5.C.J.DATE “DB2”
UNIT I
Introduction: 9 0 0
Review of Relational Databases – Database Tuning – Advanced Transaction Processing.

UNIT II
Distributed Databases: 9 0 0

UNIT III
Object Oriented Databases: 9 0 0

UNIT IV
Special Purpose Databases: 9 0 0

UNIT V
Current Trends : 9 0 0

Text Books :
2. Abdullah Uz Transelet-al, ”Temporal databases”-Theory design and implementation”, Benjamin/Cummings publishing co,1993.(IV Unit)

Reference Books :
UNIT I
Introduction
ATM– Historical Perspectives – Protocol Architecture – Logical Connections- cells Transmission of
ATM Cells – SDH – SONET –Switches

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

UNIT III
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
High Speed LANS
Fast Ethernet – ATM LANS – Lane

UNIT V
Protocols over ATM
Multiple Protocols over ATM, IP over ATM, TCP over ATM – Real Time Transport Protiocol –
Wireless ATM – Current Trends.

Text Books:

Reference Books:
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

UNIT III: CCM ARCHITECTURAL ISSUES 9 0 0

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

TEXT BOOK:

REFERENCE BOOKS:
### ELECTIVE-VI 8TH SEMESTER

| BCSE40 | FAULT TOLERANT SYSTEMS | 3 | 0 | 0 | 3 |

#### UNIT- I INTRODUCTION  9 0 0
System structuring - Recovery blocks - Early implementations and experiments - Extensions and applications of basic recovery blocks- Recovery in concurrent systems - Linguistic support for software fault tolerance.

#### UNIT- II N-VERSION PROGRAMMING & ARCHITECTURAL ISSUES  9 0 0
Fault-tolerant software: Models and techniques - Building n-version software -Experimental investigations - A design paradigm for n-version software -The system context for fault -Tolerant software- Approaches to software-fault tolerance - Analysis of software fault tolerance- Definition and analysis of hardware software fault tolerant architectures.

#### UNIT III DEPENDABILITY MODELING FOR FAULT-TOLERANT SOFTWARE  9 0 0
System Descriptions- Modeling Assumptions And Parameter Definitions-System Level Modeling-Experimental Data Analysis- Quantitative System-Level Analysis-Sensitivity Analysis-Decider Failure Probability

#### UNIT-IV DISTRIBUTED RECOVERY BLOCK SCHEME  9 0 0
Non-Negligible Fault Sources And Desirable Recovery Capabilities-Basic Principles Of The DRB Scheme-Implementation Techniques-Experimental Validations Of Real-Time Recovery

#### UNIT-V SOFTWARE FAULT INSERTION TESTING  9 0 0
Testing fault tolerance using software fault insertion- Fault manager-Categorization of software faults, errors, and failures- sfit methodology-Sample sfit test plans-Application and results.

#### TEXT BOOK:

#### REFERENCE BOOK:
2. Software Fault Tolerance Techniques And Implementations, Laura L. Pullam
UNIT I: Neuro – Fuzzy and Soft Computing

UNIT II: Neural Network

UNIT III: Fuzzy System Design

UNIT IV: Advanced Neuro – fuzzy modeling

UNIT V: Artificial Neural networks hardware

TEXT BOOK:

REFERENCE:
UNIT –I

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

UNIT – III

UNIT – IV

UNIT – V

Text Book:

Reference Books:
Unit 1 INTRODUCTION

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

Unit II TASK ASSIGNMENT AND SCHEDULING

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

Unit III PROGRAMMING LANGUAGES AND TOOLS

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

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

Unit V

FAULT TOLERANCE, RELIABILITY AND SYNCHRONIZATION

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:


REFERENCE BOOKS:

UNIT I: Human Factors of Interactive Software, Theories & principles

UNIT II: Design Process and Expert Review
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

UNIT IV: Command and Natural Languages, Interaction Devices

UNIT V: Response Time and Presentation Styles
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:

REFERENCE BOOK:
UNIT I INTRODUCTION

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOKS:

REFERENCE BOOKS:
thay
