<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Periods per week</th>
<th>Credits</th>
<th>Scheme of Examination Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>L</td>
<td>T</td>
<td>P</td>
</tr>
<tr>
<td>10BT71201</td>
<td>Web Programming</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10BT70501</td>
<td>Principles of Compiler Design</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10BT70502</td>
<td>Software Testing Techniques</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT71501</td>
<td>Network Programming</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10BT71208</td>
<td>Elective- I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT70503</td>
<td>1. Software Project Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT70504</td>
<td>2. Real Time System Design and Analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT62301</td>
<td>3. Parallel Processing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT71221</td>
<td>4. Bio-Informatics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Web Mining</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elective- II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT70505</td>
<td>1. Soft Computing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT70506</td>
<td>2. Embedded Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT71222</td>
<td>3. Software Architecture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT70507</td>
<td>4. Pattern Recognition and Image Processing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT70508</td>
<td>5. Mainframe Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT70511</td>
<td>Software Testing Techniques Lab</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10BT71211</td>
<td>Web Programming Lab</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10BT70512</td>
<td>Mini Project</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10BT7HS01</td>
<td>Professional Ethics (Audit Course)</td>
<td>-</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>24</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Code</td>
<td>Subject</td>
<td>Periods per week</td>
<td>Credits</td>
<td>Scheme of Examination Max. Marks</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------</td>
<td>------------------</td>
<td>---------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>10BT6HS01</td>
<td>Management Science</td>
<td>4 - -</td>
<td>4</td>
<td>Internal 30 External 70 Total 100</td>
</tr>
<tr>
<td>10BT80501</td>
<td>Elective – III</td>
<td>4 - -</td>
<td>4</td>
<td>Internal 30 External 70 Total 100</td>
</tr>
<tr>
<td>10BT71202</td>
<td>1. Computational Intelligence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT80502</td>
<td>2. Mobile Computing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT81221</td>
<td>3. Human Computer Interaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT80503</td>
<td>4. Adhoc Wireless Networks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT81222</td>
<td>5. Enterprise Applications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT80504</td>
<td>Elective – IV</td>
<td>4 - -</td>
<td>4</td>
<td>Internal 30 External 70 Total 100</td>
</tr>
<tr>
<td>10BT71504</td>
<td>1. High Speed Networks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT80504</td>
<td>2. Network Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT81222</td>
<td>3. Cloud Computing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT4EC01</td>
<td>4. Optimization Techniques</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT80505</td>
<td>5. C # and .Net Framework</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10BT80511</td>
<td>Comprehensive viva</td>
<td>- - -</td>
<td>2</td>
<td>Internal 100 External - Total 100</td>
</tr>
<tr>
<td>10BT80512</td>
<td>Project</td>
<td>- - 12</td>
<td>12</td>
<td>75 150 225</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>12 - 12</td>
<td>26</td>
<td>265 360 625</td>
</tr>
</tbody>
</table>
UNIT-I: INTRODUCTION TO HTML
Basic HTML, the document body, text, hyperlinks, lists, tables, images, frames, forms, Cascading Style Sheets: Introduction, simple examples, defining your own styles, properties and values in styles, formatting blocks of information, layers.

UNIT-II: JAVA SCRIPT
Basics, variables, string manipulation, arrays, functions, objects in java script, introduction to DHTML.

UNIT-III: EXTENSIBLE MARK-UP LANGUAGE (XML)
XML basics, Document Type Definition, XML Schema, Presenting XML, Introduction to DOM and SAX parsers.

UNIT-IV: SERVLET PROGRAMMING
Introduction, servlet implementation, servlet configuration, servlet exceptions, servlet lifecycle, Requests and Responses: ServletRequest, ServletResponse, HttpServletRequest, HttpServletResponse interfaces, cookies, session creation and tracking using HttpSession interface.

UNIT-V: DATABASE PROGRAMMING WITH JDBC
Database drivers, the java.sql package: connection management, database access, data types, database metadata, exceptions and warnings, loading a database driver and opening connections, establishing a connection, creating and executing sql statements querying the database, prepared statements, mapping sql types to java, transaction support, save points.

UNIT-VI: INTRODUCTION TO JSP
Introducing JSP, JSP directives, scripting elements, standard actions, implicit objects, scope and JSP pages as XML documents, introduction to MVC architecture.

UNIT-VII: JSP TAG EXTENSIONS
Introduction to javabean, advantages of javabean, introspection, getter and setter methods, introduction to JSP tag extensions, a simple tag, anatomy of a tag extension, writing tag extensions.

UNIT-VIII: JSP APPLICATIONS WITH TAG LIBRARIES
Benefits of using custom tag libraries, introducing the JSP Standard Tag Library (JSPTL), getting started with the JSPTL, integrating the JSPTL into your JSP page, the JSPTL tags.

TEXT BOOKS:
REFERENCE BOOKS:
1. Dietel and Dietel, *Internet and World Wide Web, How to program*, 4 ed, Pearson Education
UNIT-I: INTRODUCTION TO COMPILERS
Definition of compiler, interpreter and its differences, The phases of a compiler, Role of lexical analyzer, Regular expressions, Finite automata, From regular expressions to finite automata, Pass and phases of translation, bootstrapping, LEX-lexical analyzer generator.

UNIT-II: PARSING
Parsing, Role of parser, Context free grammar, Derivations, Parse trees, Ambiguity, Elimination of left recursion, Left factoring, Eliminating ambiguity from dangling-else grammar, Classes of parsing, Top-down parsing– Backtracking, Recursive-descent parsing, Predictive parsers, LL(1) grammars.

UNIT-III: BOTTOM-UP PARSING
Definition of bottom-up parsing, Handles, Handle pruning, Stack implementation of Shift-Reduce parsing, Conflicts during Shift-Reduce parsing, LR grammars, LR parsers-Simple LR, Canonical LR and Look Ahead LR parsers, Error recovery in parsing, Parsing ambiguous grammars, YACC-automatic parser generator.

UNIT-IV: SYNTAX-DIRECTED TRANSLATION
Syntax directed definition, Construction of syntax trees, S-attributed and L-attributed definitions, Translation schemes, Emitting a Translation. Intermediate Code Generation: Intermediate forms of source programs– Abstract syntax tree, Polish notation and Three address code, Types of three address statements and its implementation, Syntax directed translation into three-address code, Translation of simple statements, Boolean expressions and flow-of-control statements.

UNIT-V: TYPE CHECKING
Definition of type checking, Type expressions, Type systems, Static and dynamic checking of types, Specification of a simple type checker, Equivalence of type expressions, Type conversions, Overloading of functions and operators.

UNIT-VI: RUN TIME ENVIRONMENTS
Source language issues, Storage organization, Storage-allocation strategies, Access to nonlocal names, Parameter passing, Symbol tables, Language facilities for dynamic storage allocation.

UNIT-VII: CODE OPTIMIZATION
Organization of code optimizer, Basic blocks and flow graphs, Optimization of basic blocks, The principal sources of optimization, The DAG representation of basic block, Global data flow analysis.
UNIT-VIII: CODE GENERATION
Machine dependent code generation, Object code forms, The target machine, A simple code generator, Register allocation and assignment, Peephole optimization.

TEXT BOOK:

REFERENCE BOOKS:
UNIT - I: INTRODUCTION AND THE TAXONOMY OF BUGS

UNIT - II: FLOW GRAPHS AND PATH TESTING

UNIT - III: TRANSACTION-FLOW TESTING AND DATA-FLOW TESTING

UNIT - IV: DOMAIN TESTING

UNIT - V: PATHS, PATH PRODUCTS AND REGULAR EXPRESSIONS

UNIT – VI: LOGIC BASED TESTING
Motivational Overview, Decision Tables, Path Expressions Again, KV Charts, Specifications.

UNIT - VII: STATES, STATE GRAPHS AND TRANSITION TESTING
State Graphs, Good State Graphs and Bad, State Testing, Testability Tips.

UNIT VIII: AN OVERVIEW OF SOFTWARE TESTING TOOLS

TEXT BOOKS:

REFERENCE BOOKS:
UNIT-I: INTRODUCTION TO NETWORK PROGRAMMING
OSI model, Unix standards, TCP and UDP & TCP connection establishment and Format, Buffer sizes and limitation, standard internet services, Protocol usage by common internet application.

UNIT-II: SOCKETS
Address structures, value – result arguments, Byte ordering and manipulation function and related functions Elementary TCP sockets– Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and related function.

UNIT-III: TCP CLIENT SERVER
Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination, Crashing and Rebooting of server host, shutdown of server host.

UNIT-IV: I/O MULTIPLEXING AND SOCKET OPTIONS
I/O Models, select function, Batch input, shutdown function, poll function, TCP Echo server, getsockopt and setsockopt functions. Socket states, Generic socket option IPV6 socket option ICMPV6 socket option, IPV6 socket option and TCP socket options.

UNIT-V: ELEMENTARY UDP SOCKETS
Introduction UDP Echo server function, lost datagram, summary of UDP example, Lack of flow control with UDP, determining outgoing interface with UDP.

UNIT-VI: ELEMENTARY NAME AND ADDRESS CONVERSIONS
DNS, gethost by Name function, Resolver option, Function and IPV6 support, uname function, other networking information.

UNIT-VII: IPC
Introduction, File and record locking, Pipes, FIFOs streams and messages, Name spaces, system IPC, Message queues, Semaphores.

UNIT-VIII: REMOTE LOGIN
Terminal line disciplines, Pseudo-Terminals, Terminal modes, Control Terminals, rlogin Overview, RPC Transparency Issues.

TEXT BOOKS:
2. W.Richard Stevens, UNIX Network Programming, 1 ed, PHI.
REFERENCE BOOKS:
UNIT – I: SOFTWARE EFFORTS ESTIMATION TECHNIQUES
The waterfall model, conventional software Management performance.
Evolution of software economics: Software Economics, pragmatic software cost estimation.

UNIT – II: IMPROVING SOFTWARE ECONOMICS
Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections, The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

UNIT – III: LIFE CYCLE PHASES
Engineering and production stages, inception, Elaboration, construction, transition phases.
Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

UNIT – IV: MODEL BASED SOFTWARE ARCHITECTURES
A Management perspective and technical perspective.
Workflows of the process: Software process workflows, Iteration workflows.

UNIT – V: CHECKPOINTS OF THE PROCESS:
Major mile stones, Minor Milestones, Periodic status assessments.
Iterative process planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

UNIT – VI: PROJECT ORGANIZATIONS AND RESPONSIBILITIES

UNIT – VII: PROJECT CONTROL AND PROCESS INSTRUMENTATION
The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.
Tailoring the process: Process discriminants.

UNIT – VIII: NEXT GENERATION SOFTWARE ECONOMICS
Modern Project Profiles, Next generation Software economics, modern process transitions.
Case studies: The command Center Processing and Display system- Replacement (CCPDS-R), Process Improvement and Mapping to the CMM.
TEXT BOOK:

REFERENCE BOOKS:
IV B.Tech. I Semester

10BT70503: REAL TIME SYSTEMS DESIGN AND ANALYSIS
(ELECTIVE-I)

<table>
<thead>
<tr>
<th></th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

UNIT-I: BASIC REAL-TIME CONCEPTS
Hardware Considerations: Basic Architecture-Hardware Interfacing-Central Processing Unit-Memory-
Input/Output-Enhancing Performance-Other Special Devices-Non-von-Neumann Architectures.

UNIT-II: REAL-TIME OPERATING SYSTEMS
Real-Time Kernels-Theoretical Foundations of Real-Time Operating Systems-Intertask Communication
and Synchronization-Memory Management-Case Study: POSIX.

UNIT-III: SOFTWARE REQUIREMENTS ENGINEERING
Requirements-Engineering process-Types of Requirements-Requirements Specification for Real-Time
Systems-Formal Methods in Software Specification-Structured Analysis and Design-Object-Oriented
Analysis and the Unified Modeling Language-Requirements Validation and Review.

UNIT-IV: SOFTWARE SYSTEM DESIGN
Properties of Software-Basic Software Engineering Principles-The Design Activity-Procedural-Oriented
Design-Object-Oriented Design.

UNIT-V: PROGRAMMING LANGUAGES AND THE SOFTWARE PRODUCTION PROCESS
Introduction, Assembly Language, Procedural Languages, Object Oriented Languages, Brief Survey of
Languages, Coding Standards.

UNIT-VI: PERFORMANCE ANALYSIS AND OPTIMIZATION
Theoretical Preliminaries-Performance Analysis-Application of Queuing Theory-I/O Performance—
Performance Optimization-Results from Compiler Optimization-Analysis of Memory Requirements-
Reducing Memory Utilization.

UNIT-VII: ENGINEERING CONSIDERATIONS
Metrics-Faults, Failures, and Bugs-Fault-Tolerance-Systems Integration.

UNIT-VIII: CASE STUDY

TEXT BOOK:

REFERENCE BOOKS
UNIT I: INTRODUCTION, MOTIVATION FOR PARALLELISM
Parallel and Distributed Computers: Flynn’s Taxonomy, Distributed Memory Multicomputers, Shared
Memory Multiprocessors, Networks of Workstations, Cluster and Grid Computing.

UNIT II: MESSAGE PASSING COMPUTING
Process Creation, Message Passing Routines, Point-to-Point, Collective Communication.
MPI and PVM: MPI Model of Computation, Basic Concepts, Message Passing Routines, Point-to-Point,
Collective Communication, Comparison of MPI and PVM.

UNIT III: PERFORMANCE MEASURES
Granularity, Speed Up, Efficiency, Cost, Amdahl’s Law, Gustafson’s Law, Isoefficiency.
Analysis of Parallel Programs: Parallel Computation Models, PRAM, Modeling Communication, Cluster
Cost Model.

UNIT IV: PARALLEL PROGRAMMING TECHNIQUES
Introduction, Embarrassingly Parallel Computations: Low Level Image Processing, Mandelbrot Set,
Monte Carlo Methods.
Simple Data Partitioning: Sum of Numbers, Bucket Sort, Numerical Integration, N-Body Problem.

UNIT V: PIPELINED COMPUTATIONS
Type 1, 2 and 3 Pipelines, Sum of Sequence, Insertion Sort, Prime Number Generation, Back
Substitution.
Scheduling and Load Balancing: List Scheduling, Static Load Balancing, Dynamic Load Balancing,
Moore’s Algorithm.

UNIT VI: SYNCHRONOUS COMPUTATIONS
Data Parallel Programming, Global and Local Synchronization, Solving Linear Equations, Cellular
Automata.
Shared Memory Programming: Threads, Compiler Directives, OpenMP.

UNIT VII: APPLICATIONS
Sorting Algorithms: Rank Sort, Compare and Exchange, Bubble Sort, Quicksort, Bitonic Mergesort.
Numerical Algorithms: Matrix Algorithms, Solving Linear Equations, Gaussian Elimination; Jacobi
Iteration.

UNIT VIII: FOURIER TRANSFORMS
Serial Algorithm, Binary Exchange Algorithm, Transpose Algorithm.
TEXT BOOK:
REFERENCE BOOKS:
IV B.Tech. I Semester
10BT62301: BIOINFORMATICS (ELECTIVE – I)

UNIT –I: INTRODUCTION TO BIOINFORMATICS
Internet basics, Scope of bioinformatics, elementary commands and protocols, ftp, telnet, http, primer on information theory, introduction to perl and bioperl.

UNIT –II: INTRODUCTION TO HOMOLOGY
Introduction to homology with special mention to Charles Darwin, Sir Richard Owen, Willie Henning, Alfred Russel Wallace.

UNIT –III: SPECIAL TOPICS IN BIOINFORMATICS
DNA mapping and sequencing, map alignment, large scale sequencing methods - shotgun and Sanger method. Linkage analysis - Map marker and Darwin.

UNIT –IV: SEQUENCE ALIGNMENT AND DYNAMIC PROGRAMMING
Heuristic alignment algorithms, global sequence alignments- needleman-Wunsch algorithm, local sequence alignments- smith-waterman algorithm, amino acid substitution matrices- PAM and BLOSUM.

UNIT –V: PRIMARY DATABASE AND THEIR USE
Introduction to biological databases - organization and management, searching and retrieval of information from the World Wide Web, Structure databases - PDB (Protein Data Bank), Molecular Modeling Databases (MMDB), primary databases- NCBI, EMBL, DDBJ.

UNIT –VI: SECONDARY DATABASES
Introduction to secondary databases- organization and management of databases Swiss-Prot, PIR, KEGG.

UNIT –VII: BIOCHEMICAL DATA BASES
Introduction to biochemical databases-organization and Management of databases. KEGG, ExPASy, BRENDA, WIT.

UNIT –VIII: EVOLUTIONARY TREES AND PHYLOGENY
Multiple sequence alignment and phylogenetic analysis.

TEXT BOOKS:

REFERENCE BOOKS:
UNIT-I: INTRODUCTION
Data Mining, Analytic Customer Relationship Management, Tasks of Data Mining, Study of Data Mining, Uses of Data Mining, The Virtuous Cycle of Data Mining, A Case Study in Business Data Mining, Virtuous Cycle, Data Mining in the Context of the Virtuous Cycle, Neural Networks and Decision Trees Drive SUV Sales.

UNIT-II: DATA PREPARATION FOR MINING-I
Data Mining Methodology and Best Practices, Methodology, Hypothesis Testing, Models, Profiling, and Prediction, Methodology Steps.

UNIT-III: DATA PREPARATION FOR MINING-II
Preparing Data for Mining, Data appearance, Constructing the Customer Signature, Exploring Variables, Deriving Variables, Examples of Behavior-Based Variables, The Dark Side of Data, Computational Issues.

UNIT-IV: CLASSIFICATION METHODS-I

UNIT-V: CLASSIFICATION METHODS-II
Nearest Neighbor Approaches, Memory Based Reasoning, Challenges of MBR, Case Study: Classifying News Stories, Measuring Distance, The Combination Function, Collaborative Filtering.

UNIT-VI: ASSOCIATION RULES MINING

UNIT-VII: MINING TECHNIQUES
UNIT-VIII: MINING TOOLS
Data Mining Using Familiar Tools, Occam’s Razor, A Look at Data, Measuring Response, Multiple Comparisons, Chi-Square Test, An Example: Chi-Square for Regions and Starts, Data Mining and Statistics.

TEXT BOOK:

REFERENCE BOOKS:
UNIT I: INTRODUCTION

UNIT II: FEED FORWARD NEURAL NETWORKS

UNIT III: FEEDBACK NEURAL NETWORKS

UNIT IV: FUZZY RULES AND FUZZY REASONING
Introduction, Extension Principles and Fuzzy Relations, Fuzzy If-Then Rules, Fuzzy Reasoning.

UNIT V: OPTIMIZATION AND GENETIC ALGORITHMS

UNIT VI: NEURO FUZZY CONTROL
Neuro Fuzzy Control–II: Introduction, Reinforcement Learning Control, Gradient-Free Optimization, Gain Scheduling.
UNIT VII: NEURO FUZZY MODELING

UNIT VIII: ADVANCED APPLICATIONS
ANFIS Applications: Introduction, Printed Character recognition, Inverse Kinematics Problem, Automobile MPG Identification, Nonlinear System Identification, Channel Equalization.

TEXT BOOK:

REFERENCE BOOKS:
1. LiMin Fu, Neural Networks in Computer Intelligence, Tata McGraw-Hill, 1994.
6. Simson Haykin, Neural Networks, 2 ed, Pearson Education.
UNIT - I: EMBEDDED COMPUTING

UNIT - II: THE 8051 ARCHITECTURE
Introduction, 8051 Micro controller Hardware, Input/Output Ports and Circuits, External Memory, Counter and Timers, Serial data Input/Output, Interrupts.

UNIT - III: BASIC ASSEMBLY LANGUAGE PROGRAMMING CONCEPTS

UNIT - IV:

UNIT - V: APPLICATIONS
Interfacing with Keyboards, Displays, D/A and A/D Conversions, Multiple Interrupts, Serial Data Communication.

UNIT - VI: INTRODUCTION TO REAL-TIME OPERATING SYSTEMS
Tasks and Task States, Tasks and Data, Semaphores, and Shared Data; Message Queues, Mailboxes and Pipes, Timer Functions, Events, Memory Management, Interrupt Routines in an RTOS Environment.

UNIT - VII: BASIC DESIGN USING A REAL-TIME OPERATING SYSTEM

UNIT - VIII: INTRODUCTION TO ADVANCED ARCHITECTURES
ARM and SHARC, Processor and memory organization and Instruction level parallelism; Networked embedded systems: Bus protocols, I2C bus and CAN bus; Internet-Enabled Systems, Design Example- Elevator Controller.
TEXT BOOKS:

REFERENCE BOOKS:
UNIT-I: INTRODUCTION TO SOFTWARE ARCHITECTURE

UNIT-II: ARCHITECTURE STYLES
Pipes and Filters, Data Abstraction and Object Oriented organization, Even-based Implicit Invocation, Layered Systems, Registers, Interpreters, Process Control, Other Familiar Architectures, Heterogeneous Architectures.

UNIT-III: SHARED INFORMATION SYSTEMS

UNIT-IV: ARCHITECTURAL DESIGN GUIDANCE

UNIT-V: PATTERN TYPES
Architectural Patterns, Structural Patterns, Patterns for Distribution, Patterns for Interactive Systems.

UNIT-VI: FORMAL MODELS AND SPECIFICATIONS
Finalizing the Architectural of a Specific System, Architectural Styles, Architectural Design Space, Case Study: CORBA.

UNIT-VII: ARCHITECTURAL DESCRIPTION LANGUAGES (ADL)
Contemporary, ADL’s today, Capturing Architectural Information in an ADL, Application of ADL’s in system Development, Choosing an ADL, Example of ADL.

UNIT-VIII: REUSING ARCHITECTURAL ASSETS WITHIN AN ORGANIZATION
Creating Products and Evaluating a Product Line, Organizational Implications of a Product Line, Component Based Systems. Software Architectures in Figure Legacy Systems.

TEXT BOOKS:

REFERENCE BOOKS:
UNIT-I: INTRODUCTION TO PATTERN RECOGNITION AND MACHINE LEARNING
Paradigms, machine perception with an example, Pattern Recognition Systems, Sensing, Segmentation and grouping, feature extraction, classification. The design cycle, data collection, feature choice, model choice, training, evaluation, computational complexity, learning and adaptation, supervised learning, unsupervised learning.

UNIT-II: BAYES DECISION THEORY
Introduction, Bayesian decision theory, continuous features, two category classification, classifiers, discriminates, and Decision surfaces, multi category case, two category case, the Normal density, univariate density, multivariate density, discriminate functions for normal density.

UNIT-III: PARAMETRIC METHODS
Introduction, Maximum Likelihood estimation, Bayesian estimation, curse of dimensionality, over fitting, under fitting, computational complexity.
Non-parametric methods: Introduction, density estimation, Parzen Windows, kn nearest neighbor estimation, the nearest neighbor rule, metrics and nearest neighbor classification.

UNIT-IV: LINEAR DISCRIMINATE FUNCTIONS (LDF):
Introduction, Linear discriminant functions and decision surfaces, Generalized LDF, the Two-category linear separable case, non-separable behavior, minimizing the perceptron criterion function, Principle component analysis, fisher’s linear discriminant, Introduction to support vector machines.

UNIT-V: CLUSTERING
Introduction, hierarchal clustering algorithms, partitional clustering algorithms, Mixture resolving and mode seeking algorithms, nearest neighbor clustering, DBSCAN, online clustering techniques, a comparison of techniques, clustering large data sets, applications.

UNIT-VI: IMAGE PROCESSING
Introduction, Fundamental steps in digital image processing, components of digital image processing, light and the electromagnetic spectrum, image sensing and acquisition, Image sampling and quantization, some basic relationship between pixels, linear and non-linear operations.

UNIT-VII: IMAGE ENHANCEMENT
Background, some basic gray level transformations, histogram processing, enhancement using arithmetic and logic operations.
Color image processing: Color fundamentals, color models, pseudo color image processing, basics of full color image processing, color transformations, smoothing and sharpening, color segmentation.
UNIT-VIII: IMAGE SEGMENTATION
Detection of discontinuities, edge linking and boundary detection, Thresholding, Region based segmentation, The use of motion in segmentations, Image segmentation using clustering.

TEXT BOOKS:

REFERENCE BOOKS:
UNIT I: EVOLUTION OF MAINFRAME HARDWARE
Overview of Computer Architecture - Classification of Computers - micro, mini, mainframes and super computer - Mainframe computer- key features - benefits - Evolution of Mainframes - Different hardware systems.

UNIT II: MAINFRAMES OS AND TERMINOLOGY
Operating systems on mainframes, Batch processing vs. online processing - mainframe operating system. - evolution - concepts of Address space, Buffer management - Virtual storage - paging - swapping - Dataset management in mainframes.

UNIT III: Z/OS AND ITS FEATURES
Z-operating system (Z/OS) - Virtual storage - Paging process - storage Managers - Program execution modes - Address space - Multiple virtual system(MVS) , MVS address space, Z/OS address space - Dataset - sequential and partial dataset - Direct access storage device(DASD) -Access methods - Record formats - Introduction to virtual storage access methods(VSAM) - Catalog - VTOC.

UNIT IV: OVERVIEW OF JCL
Introduction to Job Control language - Job processing - structure of JCL statements - Various statements in JCL - JOB statement - EXEC statement - DD statement - JCL procedures and IBM utility programs.

UNIT V: OVERVIEW OF DB2
Introduction to DB2 – System Service component, Database Service component, Locking Service component, Distributed Data Facility Services component, Stored Procedure component, catalogs and optimizer.

DB2 Objects and Data Types - DB2 Objects Hierarchy, Storage groups, Database, Table space, Table, Index, Clustered index, Synonyms and aliases, Views, Data Types.(overview of relational databases).
DB2 SQL programming – Types of SQL statements, DCL, DDL, DML, SPUFI utility.
Embedded SQL programming – Host variable, DECLGEN utility, SQLCA, single/multiple row manipulation, cursors, scrollable cursors.

UNIT VI: COBOL PROGRAMMING-I
Introduction – History, evolution and Features, COBOL program Structure, steps in executing COBOL Language Fundamentals – Divisions, sections, paragraphs, sections, sentences and statements, character set, literals, words, figurative constants, rules for forming user defined words, COBOL coding sheet.
Data division – Data names, level numbers, PIC and VALUE clause, REDEFINES, RENAMES and USAGE clause.
Procedure Division – Input / Output verbs, INITIALIZE verb, data movement verbs, arithmetic verbs, sequence control verbs.

UNIT VII: COBOL PROGRAMMING-II
File processing – Field, physical / logical records, file, file organization (sequential, indexed and relative) and access mode, FILE-CONTROL paragraph, FILE SECTION, file operations.
File handling verbs – OPEN, READ, WRITE, REWRITE, CLOSE.
Table processing – Definition, declaration, accessing elements, subscript and index, SET statement, SEARCH verb, SEARCH ALL verb, comparison.
Miscellaneous verbs – COPY, CALL, SORT, MERGE, STRING, UNSTRING verbs.

UNIT VIII: MAINFRAME APPLICATION DEVELOPMENT GUIDELINES
COBOL coding standards, relation between a COBOL file handling program and JCL, Different types of ABEND codes, COBOL-DB2 program pre-compilation, DBRM (Database Request Module), Application plan/packages, program execution methods (EDIT JCL, foreground and background modes).

TEXT BOOKS:

REFERENCE BOOKS:
1. z/OS V1R4.0 MVS JCL Reference found online at http://www-1.ibm.com/support/docview.wss?uid=pub1sa22759706
2. z/OS V1R1.0 MVS JCL Reference found online at http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/iea2b600/CCONTENTS
13. DB2 Version 7 Information Center found online at http://publib.boulder.ibm.com/infocenter/db2v7luw/index.jsp
List of Practicals:

1. Generate meaningful Unit test cases for the Project module-wise and test them for defects, Identify the defects from the code and correct them. Try Identify the various unit test metrics studied already to identify module stability. Fill the unit test report supplied by the instructor.

2. Generate meaningful Integration test cases for the Project and test them for defects, Identify the defects and correct them. Try Identify the various Integration test metrics studied already to identify module stability. Fill the Integration test report supplied by the instructor.

3. Generate meaningful System test cases for the Project and test them for defects, Identify the defects and correct them. Try Identify the various System test metrics studied already to identify system stability. Fill the System test report supplied by the instructor.

4. Generate meaningful User Acceptance cases for the Project and test them for defects, Identify the defects and correct them. Try Identify the various System test metrics studied already to identify system stability. Fill the System test report supplied by the instructor.

5. Test the supplied project/Application through testing tool: WinRunner, by generating appropriate test cases.

6. Test the supplied project/Application through testing tool: LoadRunner by generating appropriate test cases.

7. Test the supplied project/Application through testing tool: Quick Test Professional by generating appropriate test cases.

TEXT BOOKS:

POLICY

Unit Testing
In the V-model of software development, unit testing implies the first stage of dynamic testing process. It involves analysis of the written code with the intention of eliminating errors. It also verifies that the codes are efficient and adheres to the adopted coding standards. Testing is usually white box. It is done using the Unit test design prepared during the module design phase. This may be carried out by software testers, software developers or both.

Integration Testing
In integration testing the separate modules will be tested together expose faults in the interfaces and in the interaction between integrated components. Testing is usually black box as the code is not directly checked for errors. It is done using the integration test design prepared during the architecture design phase. Integration testing is generally conducted by software testers.

System Testing
System testing will compare the system specifications against the actual system. The system test design derived from the system design documents and is used in this phase. Sometimes system testing is automated using testing tools. Once all the modules are integrated several errors may rise. Testing done at this stage is called system test.

User Acceptance Testing
Acceptance Testing checks the system against the requirements of the user. It uses black box testing using real data, real people and real documents to ensure ease of use and functionality of systems. Users who understand the business functions run the tests as given in the acceptance test plans, including installation and Online help. Hardcopies of user documentation are also being reviewed for usability and accuracy. The testers formally document the results of each test, and provide error reports, correction requests to the developers.

Lab Pre-requirements:
   a. Software Project
   b. Various test reports like
      - Unit Testing reports
      - Integration Testing reports
      - System Testing reports
      - User Acceptance Testing reports
   c. Software development Environment like studio, eclipse etc. (where applications are developed)
   d. Software Project documents like System requirement document, design document and any other project document for the case.

Test cases are to be generated manually and automated where ever required. The application to be used for this will be supplied in the department. The intention of the student will be to write the various types of test cases, find the defects from the product/program supplied and fix the issues. Student needs to identify defects accordingly from the V-model of software development.
List of Practicals:

1. Design the following static web pages required for an online book store web site.

A. Home Page:
The static home page must contain the following three frames:
Top frame: Logo and the book store name and links to Home page, about us page, collections page, contact us page and cart page.
Left frame: At least four links for navigation, which will display the book catalogue of respective areas. For e.g.: when you click the link “Computer” the catalogue for computer books should be displayed in the right frame.
Right frame: The pages of the links in the left and top frame must be loaded here. Initially it will display the description of the web site, i.e., page of the Home link will be loaded.

<table>
<thead>
<tr>
<th>Logo Name of the Book Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
</tr>
<tr>
<td>Computer</td>
</tr>
</tbody>
</table>

B. Login Page:
The login page looks like as follows (Link this page to Sign In link):

2. Design the following static web pages for an online book store web site.

A. Catalogue Page:
The catalogue page should contain the details of books available in the web site. The details are as follows:
   a. Snap shot of cover page  b. Text book name  
c. Author name   d. Publisher  e. Price  f. Add to cart link.

<table>
<thead>
<tr>
<th>Logo</th>
<th>Name of the Book Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>About Us</td>
</tr>
</tbody>
</table>

**Computer Books**

<table>
<thead>
<tr>
<th>Cover Page</th>
<th>Book Details</th>
<th>Price</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="XML.jpg" alt="Image" /></td>
<td>XML Bible  Author: Winston  Publication: Wiley</td>
<td>INR 399.00</td>
<td>Add to Cart</td>
</tr>
<tr>
<td><img src="Multimedia.jpg" alt="Image" /></td>
<td>Multimedia  Author: Ze Nian Li  Publication: Pearson</td>
<td>INR 455.00</td>
<td>Add to Cart</td>
</tr>
<tr>
<td><img src="HTML.jpg" alt="Image" /></td>
<td>HTML  Author: Watson  Publication: SPD</td>
<td>INR 355.00</td>
<td>Add to Cart</td>
</tr>
</tbody>
</table>

**B. Registration Page:**

Design the Registration page with the following fields (Link this page to Sign Up link).
   a. First Name   b. Last Name   c. User ID  
d. Password  e. Confirm Password  f. Gender  
g. Date of Birth h. Address  i. Postal Code  
j. Linguistics  k. Mobile No.  l. Email-ID

**C. Cart Page:**

<table>
<thead>
<tr>
<th>Logo</th>
<th>Name of the Book Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>About Us</td>
</tr>
</tbody>
</table>

**Selected Books**

<table>
<thead>
<tr>
<th>Book Name</th>
<th>Price</th>
<th>Quantity</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>XML bible</td>
<td>399.00</td>
<td>2</td>
<td>INR 798.00</td>
</tr>
<tr>
<td>HTML</td>
<td>355.00</td>
<td>1</td>
<td>INR 355.00</td>
</tr>
</tbody>
</table>

Total amount (INR): **1153.00**

3. Write a JavaScript code to validate the following fields of the registration page.
   a. First Name/Last Name - should contain only alphabets and the length should not be less than 3 characters.
b. User ID - It should contain combination of alphabets, numbers and _. It should not allow spaces and special symbols.

c. Password - It should not be less than 8 characters in length.

4. Write a JavaScript code to validate the following fields of the registration page.
   a. Date of Birth - It should allow only valid date; otherwise display a message stating that entered date is invalid. Ex. 29 Feb. 2009 is an invalid date.
   b. Mobile No. - It should allow only numbers and total number of digits should be equal to 10.
   c. E-mail id - It should allow the mail id with the following format:
      Ex. mailid@domainname.com

5. Apply the following styles to static pages of online book store web site using CSS (Cascading Style Sheets):
   a. Fonts and Styles: font-family, font-style, font-weight and font-size
   b. Backgrounds and colors: color, background-color, background-image and background-repeat
   c. Text: text-decoration, text-transformation, text-align and text-indentation, text-align
   d. Borders: border, border-width, border-color and border-style
   f. Selectors, Classes and Layers.

6. Write an XML file which includes the following:
   a. Title of the book  
   b. Author of the book  
   c. ISBN number  
   d. Name of the publisher  
   e. Edition  
   f. Price  
   i. Write a Document Type Definition (DTD) or XML Schema to validate the above XML file.
   ii. Display the contents of the XML file with the following format using XSL. The contents should be displayed in a table. The header of the table should be in color grey, and the author names should be displayed in red color, bold and capitalized. Use your own colors for remaining fields.

7. A. Deploy web pages of online book store web site using Apache Tomcat web server and then navigate them thorough the default port number of the tomcat web server.
   B. Write a Java Servlet program for displaying the system date.
   C. Write a Java Servlet program to red user name and his/her favorite color from the html form.
      Display the name of the user in green color and set user favorite color as a background color to the web page.

8. Write a Java Servlet program to read the user id and password entered in the Login form and authenticate with the values (user id and passwords) available in the cookie and web.xml file. If he/she is a valid user (i.e., user id and password match) you should welcome him/her by user id otherwise you should display a message stating that you are not an authorized user. Use the following methods for storing user id’s and passwords:
   A. Using Cookes - Assume four user id’s user1, user2, user3 and user4 and their passwords pwd1, pwd2, pwd3 and pwd4 respectively. Create four cookies on four user id’s and passwords.
   B. Initialization Parameters in web.xml - Store the user id’s and passwords in the web.xml file and access them through the servlet by using the getInitParameters() method.
9. Write a Java Servlet or JSP to store user details (entered in the Registration Form) into the database using JDBC. Use any RDBMS as backend for storing user details.

10. Write a Java Servlet or JSP to authenticate the user by reading user id and password entered in the Login form. Compare User id and password values with user id’s and passwords stored at database. If he/she is a valid user (i.e., user id and password match) you should welcome him/her by name (first name + last name), otherwise you should display a message stating that you are not an authorized user.

11. A. Write a Java program for storing books details like Name of the text book, author, publisher, edition and price into the database using JDBC. Store books in database based on the category (i.e., Computer/Electrical/Electronic/Bio-Tech).

   B. Write a Java servlet or JSP for updating catalogue page to extract books details from the database and then display them in tabular format using JDBC.

12. HTTP is a stateless protocol. Session is required to maintain the state. The user may add some items to cart from the catalogue page. He can check the cart page for the selected items. He may visit the catalogue again and select some more items. Here our interest is the selected items should be added to the old cart rather than a new cart. Multiple users can do the same thing at a time (i.e., from different systems in the LAN using the IP-address instead of localhost). This can be achieved through the use of sessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated. Modify your catalogue and cart pages to achieve the above mentioned functionality using sessions.
UNIT-I: ENGINEERING ETHICS

UNIT-II: PROFESSIONAL IDEALS AND VIRTUES
Theories about virtues, professional responsibility, integrity, self-respect, sense of “responsibility”. Self-Interest, Customs and Religion- Self-interest and ethical egoism, customs and ethical relativism, religion and divine command ethics. Use of ethical theories- resolving moral dilemmas and Moral leadership.

UNIT-III: ENGINEERING AS SOCIAL EXPERIMENTATION
Engineering as experimentation- similarities to standard experiments, learning from the past and knowledge gained. Engineering as Responsible experiments- Conscientiousness. Moral autonomy and accountability, the challenger case.

UNIT-IV: RESPONSIBILITIES AND RIGHTS

UNIT-V: GLOBAL ISSUES
Multinational corporations-Professional ethics, environmental ethics, computer ethics, Engineers as Managers, Consultants and Leaders. Engineers as managers – Managerial ethics applied to engineering profession.

TEXT BOOKS:

REFERENCE BOOKS:
1. Dr. S. Kannan, K. Srilakshmi, Human Values and Professional Ethics, Taxmann Allied Services Pvt Ltd., 2009.
IV B.Tech. II Semester
10BT6HS01: MANAGEMENT SCIENCE

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

UNIT - I: INTRODUCTION TO MANAGEMENT

UNIT - II: DESIGNING ORGANIZATIONAL STRUCTURES
Basic concepts related to organization – Departmentation and decentralization - Types of organizations – Merits, demerits and adoptability to modern firms.

UNIT - III: OPERATIONS MANAGEMENT
Principles and types of plant layout - Methods of production - Forecasting - Forecasting methods - Work study - Basic procedure involved in method study and work measurement - Statistical quality control: Factors affecting quality - Quality control using control charts (simple problems) - Acceptance sampling.

UNIT - IV: MATERIALS MANAGEMENT
Materials management objectives – Inventory - Types of inventory- Safety stock - Classical EOQ model - Need for inventory control – EOQ simple problems - ABC analysis - Purchase procedure - Stores management.
Marketing: Functions of marketing - Marketing mix - Channels of distribution.

UNIT - V: HUMAN RESOURCES MANAGEMENT (HRM)
Nature and scope of HRM - HRD and personnel management and industrial relations - Functions of HRM - Role of HR Manager in an organization - Performance appraisal - Job evaluation and merit rating - Motivation - Importance of motivation - Maslow's theory of human needs - McGregor's theory X and theory Y - Herzberg's two-factor theory.

UNIT - VI: PROJECT MANAGEMENT (PERT/CPM)
Network analysis - Program evaluation and review technique (PERT)- Critical path method (CPM) - Identifying critical path - Probability of completing the project within given time - Project cost analysis - Project crashing (simple problems).

UNIT - VII: ENTREPRENEURSHIP
Introduction to entrepreneurship - Definition of an entrepreneur - Entrepreneurial traits - Entrepreneur vs. Manager - Entrepreneurial decision process - Role of entrepreneurship in economic development - Social responsibilities of entrepreneurs - Opportunities for entrepreneurs in India and abroad - Women as an entrepreneur.

UNIT - VIII: CONTEMPORARY MANAGEMENT PRACTICES
Basic concepts of Just-In-Time (JIT) system - Total quality management (TQM) - Value chain analysis - Enterprise resource planning (ERP) - Business process outsourcing (BPO) - Globalization-
Management challenges - Intellectual property rights - Supply chain management - Role of information technology in managerial decision making.

TEXT BOOKS:

REFERENCE BOOKS:
UNIT I: COMPUTATIONAL INTELLIGENCE AND KNOWLEDGE
Intelligent Agents in the world, Representation and Reasoning.
Representation and Reasoning Systems: Representation and Reasoning systems, semantics.
Using Definite Knowledge: Applications in natural language processing.

UNIT II: SEARCHING
Graph searching, A generic searching algorithm, blind search strategies, Heuristic search, Refinements to search strategies.
Representing Knowledge: Choosing a representation language, mapping from PBM to reorientation, Choosing an inference procedure.

UNIT III: KNOWLEDGE ENGINEERING
Knowledge based system Arch, Meta interpreters, Querying the user, explanation.
Beyond Definite Knowledge: Equality, integrity constraints, Complete Knowledge Assumption, Disjunctive Knowledge, Explicit Quantification, First-order predicate calculus, model logic.

UNIT IV: ACTIONS AND PLANNING
Representations of actions and change, Reasoning with world representation.

UNIT V: ASSUMPTION BASED REASONING
An assumption based reasoning framework, default reasoning, abduction, evidential and casual reasoning, algorithms for assumption based reasoning.

UNIT VI: USING UNCERTAIN KNOWLEDGE
Probability, independence assumptions.

UNIT VII: MAKING DECISIONS UNDER CERTAINTY AND LEARNING
Learning as the best representation, case based reasoning, learning as refining the hypothesis space.

UNIT VIII: LEARNING UNDER UNCERTAINTY BUILDING SITUATED ROBOTICS
Robotic systems, the agent function, designing robotics, uses of agent models, robot architecture, implementing a controller, robots modeling the world, reasoning in situation robots.

TEXT BOOK:

REFERENCE BOOKS:
UNIT - I: MOBILE COMPUTING (MC)
Introduction, History, architecture, devices and applications, limitations.

UNIT II: MEDIUM ACCESS CONTROL
Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA.

UNIT III: WIRELESS LAN

UNIT IV: MOBILE NETWORK LAYER
Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunneling and encapsulation, optimizations), Dynamic Host Configuration Protocol (DHCP). Mobile Transport Layer: Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/ fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

UNIT V: DATABASE ISSUES
Hoarding techniques, caching invalidation mechanisms, client server computing with adaptation, power-aware and context-aware computing, transactional models, query processing, recovery, and quality of service issues.

UNIT VI: DATA DISSEMINATION
Push-based mechanisms, pull-based mechanisms, hybrid mechanisms, selective tuning (indexing) techniques.

UNIT VII: MOBILE ADHOC NETWORKS (MANETS)
Overview, Properties of a MANET, spectrum of MANET applications, routing and various routing algorithms, security in MANETs.

UNIT VIII: PROTOCOLS AND TOOLS
Wireless Application Protocol-WAP. (Introduction, protocol architecture, and treatment of protocols of all layers) and J2ME.
**TEXT BOOKS:**

**REFERENCE BOOKS:**
IV B.Tech. II Semester

10BT80502: HUMAN COMPUTER INTERACTION
(ELECTIVE – III)

UNIT I: INTRODUCTION
Importance of user Interface – definition, importance and benefits of good design, a brief history of Screen design.

UNIT II: THE GRAPHICAL USER INTERFACE
Popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user interface-popularity, characteristics, Principles of user interface design.

UNIT III: DESIGN PROCESS
Human interaction with computers, importance of human characteristics, human consideration in design, Human interaction speeds, Understanding business functions.

UNIT IV: SCREEN DESIGNING

UNIT V: WINDOWS
System menus and Navigation schemes, selection of window, selection of devices based controls and screen based controls, organize and layout windows and web pages, Touch screen and surface computing.

UNIT VI: COMPONENTS
Text and messages, Icons and images, Multimedia.
Colours - uses, problems with colours, choosing colours.

UNIT VII: SOFTWARE TOOLS

UNIT VIII: INTERACTION DEVICES
Keyboard and function keys – pointing devices – speech recognition, digitization and generation, image and video displays.

TEXT BOOKS:
2. Ben Shneidermann, Designing the user interface, 3 ed, Pearson Education Asia.
REFERENCE BOOKS:
IV B.Tech. II Semester
10BT81221: ADHOC WIRELESS NETWORKS
(ELECTIVE – III)

UNIT-I: INTRODUCTION
Fundamentals of wireless communication technology, The electromagnetic spectrum, Radio propagation mechanisms, Characteristics of wireless channels, Modulation techniques, Multiple access techniques, Voice coding, Error control, IEEE 802 networking standard.

UNIT-II: ISSUES IN ADHOC WIRELESS NETWORKS
Introduction, Issues in Adhoc wireless Networks, MAC layer issues, Network layer issues, Multicasting issues, Transport layer issues and other issues, Adhoc wireless Internet.

UNIT-III: DESIGN GOALS OF MAC PROTOCOLS

UNIT-IV: ROUTING PROTOCOLS FOR ADHOC WIRELESS NETWORKS:

UNIT-V: MULTICAST ROUTING IN ADHOC WIRELESS NETWORKS

UNIT-VI: TRANSPORT LAYER AND SECURITY PROTOCOLS FOR ADHOC WIRELESS NETWORKS

UNIT-VII: QUALITY OF SERVICE(QOS)
Introduction, Issues and Challenges in providing QOS in Adhoc wireless networks, Classification of QOS Solutions, Mac Layer Solutions, Network Layer Solutions, QOS Frame work for Ad hoc wireless networks.

UNIT-VIII: SECURITY IN ADHOC WIRELESS NETWORKS
TEXT BOOK:

REFERENCE BOOKS:
UNIT I: INTRODUCTION
Introduction to enterprise applications and their types, software engineering methodologies, life cycle of raising an enterprise application, introduction to skills required to build an enterprise application, key determinants of successful enterprise applications, and measuring the success of enterprise applications.

UNIT II: ENTERPRISE APPLICATIONS
Inception of enterprise applications, enterprise analysis, business modeling, requirements elicitation, use case modeling, prototyping, non functional requirements, requirements validation, planning and estimation.

UNIT III: ARCHITECTURE
Concept of architecture, views and viewpoints, enterprise architecture, logical architecture, technical architecture - design, different technical layers, best practices, data architecture and design – relational, XML, and other structured data representations.

UNIT IV: ARCHITECTURE AND DESIGN ELEMENTS
Infrastructure architecture and design elements - Networking, Internetworking, and Communication Protocols, IT Hardware and Software, Middleware, Policies for Infrastructure Management, Deployment Strategy, Documentation of application architecture and design.

UNIT V: CONSTRUCTION READINESS OF ENTERPRISE APPLICATIONS
Defining a construction plan, defining a package structure, setting up a configuration management plan, setting up a development environment.

UNIT VI: SOFTWARE CONSTRUCTION MAPS
Introduction to the concept of Software Construction Maps, construction of technical solutions layers, methodologies of code review, static code analysis, build and testing, dynamic code analysis–code profiling and code coverage.

UNIT VII: TESTING AN ENTERPRISE APPLICATIONS
Types and methods of testing an enterprise application, testing levels and approaches, testing environments, integration testing, performance testing, penetration testing, usability testing, globalization testing and interface testing, user acceptance testing, rolling out an enterprise application.

UNIT VIII: BUSINESS LOGIC
The Façade Pattern, The UserManager, State Design.
TEXT BOOKS:

REFERENCE BOOKS:
5. Designing Enterprise Applications with the J2EE Platform (PDF available at http://java.sun.com/blueprints/guidelines/designing_enterprise_applications_2e/)
UNIT I: INTRODUCTION

UNIT II: CONGESTION AND TRAFFIC MANAGEMENT
Congestion Control in Data Networks and Internets, Link-Level Flow and Error Control, TCP Traffic Control, Traffic and Congestion Control in ATM Networks.

UNIT III: INTERNET ROUTING

UNIT IV: QUALITY OF SERVICE IN IP NETWORKS
Integrated and Differentiated Services, Protocols for QoS Support

UNIT V: COMPRESSION
Overview of Information Theory, Lossless Compression, Lossy Compression.

UNIT VI: ASYNCHRONOUS TRANSFER MODE NETWORKS
ATM Protocol Architecture, ATM Adaptation Layer fast Packet Switching techniques and VC/VP encapsulation, Source Characteristics.

UNIT VII: ATM TRAFFIC MANAGEMENT
Traffic management issues in ATM-resource management, Connection management, Policing and reactive control principles, Discrete time queue analysis and application to CAC, Leaky bucket and ECN/ICN.

UNIT VIII: ATM SIGNALING AND DATA COMMUNICATION OVER ATM
ATM Signaling fundamentals and Meta Signaling, TCP/IP over ATM, Challenges and Proposals, LAN emulation over ATM, Performance of data communication over ATM.

TEXT BOOKS:
REFERENCE BOOKS:
1. W.Stallings, High speed networks, TCP/IP and ATM design Principles, 2 ed, PHI.
IV B.Tech. II Semester

10BT71504: NETWORK MANAGEMENT
(ELECTIVE-IV)

UNIT-I: DATA COMMUNICATIONS AND NETWORK MANAGEMENT OVERVIEW

UNIT-II: BASIC FOUNDATIONS

UNIT-III: SNMPV1 NETWORK MANAGEMENT

UNIT-IV: SNMPV2 NETWORK MANAGEMENT
SNMPv2, Major Changes in SNMPv2, SNMPv2 System Architecture, SNMPv2 Structure of Management Information, SNMPv2 Management Information Base, SNMPv2 Protocol.

UNIT-V: SNMPV3 NETWORK MANAGEMENT

UNIT-VI: REMOTE MONITORING
RMON, Remote Monitoring, RMON SMI and MIB, RMON1, RMON2, A Case Study on Internet Traffic Network management tools, systems and engineering.

UNIT-VII: TELECOMMUNICATIONS MANAGEMENT NETWORK
TMN Conceptual model, TMN standards, TMN Architecture, TMN implementation, Network Management Applications.

UNIT-VIII: BROADBAND NETWORK MANAGEMENT
WAN, Wired and optical access Networks, advanced management topics. Distributed Network Management, Reliable and Fault Tolerant Network Management.
TEXT BOOK:

REFERENCE BOOKS:
UNIT- I: INTRODUCTION TO CLOUD COMPUTING

UNIT- II: CLOUD COMPUTING ARCHITECTURE

UNIT- III: INTRODUCTION TO VIRTUALIZATION
History of virtualization, objectives of virtualization, benefits of virtualized technology, the virtual service desk, related forms of computing, virtualization processes.

UNIT- IV: VIRTUALIZATION TECHNOLOGIES
VMware, Microsoft Hyper-V, Virtual Iron, Xen, Ubuntu (Server Edition), Software Virtualization, Para Virtualization, OS Virtualization, Oracle Virtualization, Storage Virtualization Technologies, Virtualization and Storage Management.

UNIT- V: SECURITY

UNIT – VI: DISASTER RECOVERY
Disaster Recovery Planning, Disasters in the Cloud, Disaster Management. Scaling a Cloud Infrastructure- Capacity Planning, Cloud Scale.

UNIT – VII: GRAPH REDUCTION
Introduction, Types of Graphs, Examples, Representation and Application.

UNIT – VIII: CASE STUDIES
Google APP Engine, Yahoo Hadoop, OBIEE and Windows Azure.

TEXT BOOKS:
1. George Reese, Cloud Application Architectures Building Applications and Infrastructure in the Cloud, O’Reilly Media Released, April 2009.
REFERENCE BOOKS:
IV B.Tech. II Semester

10BT4EC01: OPTIMIZATION TECHNIQUES
(ELECTIVE-IV)

UNIT I: INTRODUCTION TO OPTIMIZATION TECHNIQUES
Statement of an optimization problem, design vector, design constraints, constraint surface, objective function, objective function surfaces, classification of optimization problems.

UNIT II: CLASSICAL OPTIMIZATION TECHNIQUES
Single variable optimization, multi variable optimization without constraints, necessary and sufficient conditions for minimum/maximum, multivariable optimization with equality constraints, solution by method of lagrange multipliers, multivariable optimization with inequality constraints, Kuhn – Tucker conditions.

UNIT III: INTRODUCTION TO LINEAR PROGRAMMING
Standard form of a linear programming problem, geometry of linear programming problems, definitions and theorems, solution of a system of linear simultaneous equations, pivotal reduction of a general system of equations, motivation to the simplex method, simplex algorithm, big M-method, dual simplex algorithm.

UNIT IV: TRANSPORTATION PROBLEM AND CONVEX PROGRAMMING
Finding initial basic feasible solution by North–West corner rule, least cost method and Vogel’s approximation method, Assignment problems, variants, Integer Programming, Branch and bound technique, Convex programming.

UNIT V: UNCONSTRAINED NONLINEAR PROGRAMMING:
One–dimensional minimization methods: Classification, Fibonacci method, Problems and Quadratic interpolation method, Problems.

UNIT VI: UNCONSTRAINED OPTIMIZATION TECHNIQUES

UNIT VII: CONSTRAINED NONLINEAR PROGRAMMING
Characteristics of a constrained problem, Classification, Basic approach of Penalty Function method; Basic approaches of Interior and Exterior penalty function methods.

UNIT VIII: DYNAMIC PROGRAMMING
Dynamic programming, multistage decision processes, types, concept of sub optimization and the principle of optimality, computational procedure in dynamic programming, examples illustrating the calculus method of solution, examples illustrating the tabular method of solution.
TEXT BOOKS:

REFERENCE BOOKS:
IV B.Tech. II Semester

10BT80505: C# AND .NET FRAMEWORK
(ELECTIVE-IV)

UNIT I: C# LANGUAGE FUNDAMENTS
Basic class, constructors, composing an application, variable scope, input and output with Console Class, value types, reference types, System.Object, system data types, Boxing and Unboxing, constants, iteration constructs, flow constructs, operators, class methods, static methods, modifiers, arrays, strings, enumerations, structures, name spaces.

UNIT II: OBJECT ORIENTED PROGRAMMING WITH C#
Definition of a class, default public interface, encapsulation, read only fields, inheritance support, protected keyword, nested type definitions, polymorphism, type casting, class definitions.

UNIT III: EXCEPTIONS AND OBJECT LIFETIME

UNIT IV: INTERFACES AND COLLECTIONS, CALLBACK INTERFACES, DELEGATES AND EVENTS
Defining, invoking, exercising hierarchy, interface implementation, building interface hierarchies, understanding Iconvertible interface, custom enumerator, Icloneable, Icomparable, System.Collections, callback interfaces, System.MulticastDelegate, examples, asynchronous delegates, understanding events.

UNIT V: .NET ASSEMBLY, PROCESSES, APPDOMAINS, CONTEXTS AND THREADS
Overview of .Net assembly, cross language inheritance, multi-file assembly, private assembly, XML configuration files, shared assemblies, strong names.

UNIT VI: OBJECT SERIALIZATION AND .NET REMOTING LAYER
Object graphs, serialization using binary formatter, SOAP formatter, XML formatter, .Net remoting, object marshaling, MBR objects, MBV objects, asynchronous remoting, OneWayAttribute.
UNIT VII: WINDOWS FORMS, WINDOWS FORM CONTROLS
System.Windows.Forms, interactions with Windows Forms types, System.Windows.Forms.Application, component class, control class, control events key board events, ScrollableControl class, ContainerControl Class, Form class, Life-Cycle, handling form events, Menus with Windows Forms, status bars, tool bar, MDI application, Windows Forms Control Hierarchy, Controls to Forms, Text box control, check boxes, RadioButtons, GroupBoxes, ListBoxes, ComboBoxes, MonthCalendar Control, TrackBar, Panel controls, Dialog Boxes, Form Inheritance.

UNIT VIII: DATA ACCESS WITH ADO .NET
ADO.Net, Data providers, System.Data, DataColumn Type, DataRow Type, DataTable, DataView, DataSet, DataRelation, XML Based DataSet, Selecting a data provider, System.Data.OleDb Namespace, OleDbDataReader, Insertion, Updation and Deletion of records, stored procedures, OleDbDataAdapter, Example.

TEXT BOOK:

REFERENCE BOOKS: