# Scheme of teaching and examination

## B.E. VII Semester Information Technology

<table>
<thead>
<tr>
<th>S. No</th>
<th>Board of Study</th>
<th>Subject Code</th>
<th>Subject Name</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>ESE</th>
<th>CT</th>
<th>TA</th>
<th>Total Marks</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Info. Technology</td>
<td>333711(33)</td>
<td>Software Engineering</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>80</td>
<td>20</td>
<td>20</td>
<td>120</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Info. Technology</td>
<td>333712(33)</td>
<td>Management Information System</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>80</td>
<td>20</td>
<td>20</td>
<td>120</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Info. Technology</td>
<td>333713(33)</td>
<td>E- Commerce</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>80</td>
<td>20</td>
<td>20</td>
<td>120</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Info. Technology</td>
<td>333714(33)</td>
<td>Artificial Intelligence &amp; Expert Systems</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>80</td>
<td>20</td>
<td>20</td>
<td>120</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Refer Table-2</td>
<td></td>
<td>Professional Elective-2</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>80</td>
<td>20</td>
<td>20</td>
<td>120</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Info. Technology</td>
<td>333721(33)</td>
<td>Software Engineering - Lab</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>40</td>
<td>-</td>
<td>20</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Info. Technology</td>
<td>333722(33)</td>
<td>Artificial Intelligence &amp; Expert Systems Lab</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>40</td>
<td>-</td>
<td>20</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Info. Technology</td>
<td>333723(33)</td>
<td>Software Technology Lab - 4</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>40</td>
<td>-</td>
<td>20</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>Info. Technology</td>
<td>333724(33)</td>
<td>Minor Project</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>100</td>
<td>-</td>
<td>40</td>
<td>140</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>Management</td>
<td>300725(36)</td>
<td>Innovative &amp; Entrepreneurial Skills</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>40</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Info. Technology</td>
<td>333726(33)</td>
<td>** Practical Training ** Evaluation / Library</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>40</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>TOTAL</strong></td>
<td>16</td>
<td>4</td>
<td>20</td>
<td>620</td>
<td>100</td>
<td>280</td>
<td>1000</td>
<td>31</td>
</tr>
</tbody>
</table>

L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Examination, CT- Class Test, TA- Teacher’s Assessment

* To be completed after VI Semester and before the commencement of VII Semester

### Table-2

#### Professional Elective (Table-II)

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Board of Studies</th>
<th>Subject Code</th>
<th>Subject Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Comp. Science &amp; Engg.</td>
<td>322751 (22)</td>
<td>Digital Image Processing</td>
</tr>
<tr>
<td>2</td>
<td>Comp. Science &amp; Engg.</td>
<td>322752 (22)</td>
<td>Advanced Computer Architecture</td>
</tr>
<tr>
<td>3</td>
<td>Information Technology</td>
<td>333753 (33)</td>
<td>Multimedia and Communications</td>
</tr>
<tr>
<td>4</td>
<td>Comp. Science &amp; Engg.</td>
<td>322755 (22)</td>
<td>Cryptography &amp; Network Security</td>
</tr>
<tr>
<td>5</td>
<td>Comp. Science &amp; Engg.</td>
<td>322756 (22)</td>
<td>Fault Tolerant Systems</td>
</tr>
<tr>
<td>6</td>
<td>Comp. Science &amp; Engg.</td>
<td>322757 (22)</td>
<td>Natural Languages Processing</td>
</tr>
<tr>
<td>7</td>
<td>Comp. Science &amp; Engg.</td>
<td>322758 (22)</td>
<td>OODBMS</td>
</tr>
</tbody>
</table>

Note-1 : 1/4 of total strength of students subjects to Minumum Strength of twenty students is required to offer an elective in the college in a particular academic session.

Note -2 : Choice of elective course once made for an examination cannot be changed for future examination.
UNIT-I    INTRODUCTION TO SOFTWARE ENGINEERING
Definition and use of Software Engineering Terms related to Software Engineering activities. Size Factors :- Trivial projects, Small projects, Medium size projects, Large projects , Very large projects, Extremely large projects Quality and Productivity factors during Software Development Managerial Issues:- Ideal or expected activities of Managers in a firm

UNIT-II   PLANNING AND ANALYSIS PHASE:

UNIT-III   DESIGN PHASE

UNIT IV   CODING PHASE
Coding :- Coding Techniques, Suggestions on good Coding Style (Do’s and Don’t’s), Internal Documentation, Verification and Validation, Objects, Modules and Reusability.
UNIT –V SOFTWARE TESTING, MAINTENANCE PHASE & CASE Tools
Testing:- Types of Tests, Test Report and Analysis.
Maintenance:- Definition of Software Maintenance, Types of Maintenance, Management of software maintenance.
CASE Tools:- Introduction to CASE tools, Use of CASE tools in various phases of Software Development.

Text Books:-
1  Fundamentals of software Engineering, Rajib Mall, Prentice Hall of India
2  Software Engineering by Roger Pressman

Reference Books:-
1  Software Engineering by Evan Scatch
2  Software Engineering by Pankaj Jalote
3  Fundamental of Software Engg- Ghezzi, Jazayer’s and Mandriolli (PHI).
UNIT - I: MANAGEMENT & ORGANIZATIONAL SUPPORT SYSTEMS FOR DIGITAL FIRM:
Definition of MIS; Systems approach to MIS: MIS and Human factor considerations, concept of organizational information sub-system, MIS & problem solving. Information Technology Infrastructure for digital firm. Related Case Studies.

UNIT - II: INFORMATION SYSTEMS & BUSINESS STRATEGY:

UNIT-III: INFORMATION SYSTEMS IN THE ENTERPRISE:

UNIT-IV: INFORMATION TECHNOLOGY FOR COMPETITIVE ADVANTAGE:
Firm in its environment, the information resources, who manages the information resources? Strategic planning for information resources. End-User Computing as a strategic issue, Information resource management concept. Knowledge management & their work system, Business value of information system Related Case Studies.

UNIT-V: INTERNATIONAL INFORMATION SYSTEM:
Introduction to E-Commerce, Business Intelligence. E-Commerce strategy, Electronic Data Interchange, E-commerce methodology, E-commerce technology & their success strategies.

Text Book:
1. MIS managing the digital firm, Kenneth C. Laudon & Jane P. Laudon (Pearson Education).
2. MIS, Suresh K. Basandra (Wheelers)

Reference Books:
1. Introduction to computer Information System for Business, Mark G. Simkin. S. Chand & Co., 1996.
3. Analysis and Design of information system, V.Rajaraman( PHI)
Unit 1:

Unit 2:
Components of I-way, Network Access Equipment, National-Independent ISPs, Regional-level ISPs, Local-level ISPs.

Unit 3:

Unit 4:

Unit 5:
Electronic Data Interchange, EDI Applications in Business, EDI and E-Commerce, Standardization and EDI, EDI Software Implementation, Value Added Networks (VANs), Internal Information Systems.

Text Books:
2. E-Commerce – The Cutting Edge of Business by Bajaj, Tata McGraw-Hill

Reference Books:
3. Electronic Commerce by David Kosiur, Published by Microsoft Press.
CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VII  
Subject: Artificial Intelligence and Expert System.  
Total Theory Periods: 40  
Total Marks in End Semester Exam: 80  
Minimum number of class tests to be conducted: 02

UNIT-1  GENERAL ISSUES AND OVERVIEW OF AI:
The AI problems; what is an AI technique; Characteristics of AI applications Problem Solving, Search and Control Strategies General Problem solving; Production systems; Control strategies: forward and backward chaining Exhaustive searches: Depth first Breadth first search.

UNIT-2  HEURISTIC SEARCH TECHNIQUES:
Hill climbing; Branch and Bound technique; Best first search and A* algorithm; AND/OR Graphs; Problem reduction and AO* algorithm; Constraint Satisfaction problems Game Playing Minmax search procedure; Alpha-Beta cutoffs; Additional Refinements

UNIT-3  KNOWLEDGE REPRESENTATION
First Order Predicate Calculus; Skolemisation; Resolution Principle and Unification; Inference Mechanisms Horn’s Clauses; Semantic Networks; Frame Systems and Value Inheritance; Scripts; Conceptual Dependency AI Programming Languages Introduction to LISP, Syntax and Numeric Functions; List manipulation functions; Iteration and Recursion; Property list and Arrays, Introduction to PROLOG.

UNIT-4  NATURAL LANGUAGE PROCESSING PARSING TECHNIQUES:
Context - free Grammar; Recursive Transition Nets (RTN); Augmented Transition Nets (ATN); Semantic Analysis, Case and Logic Grammars; Planning Overview - An Example Domain: The Blocks Word; Component of Planning Systems; Goal Stack Planning (linear planning); Non-linear Planning using constraint posting ; Probabilistic Reasoning and Uncertainty; Probability theory; Bayes Theorem and Bayesian networks; Certainty Factor.

UNIT-5  EXPERT SYSTEMS:
Introduction to Expert Systems, Architecture of Expert Systems; Expert System Shells; Knowledge Acquisition; Case Studies: MYCIN, Learning, Rote Learning; Learning by Induction; Explanation based learning.

Text Book:
2. Dan W.Patterson, Introduction to Artificial Intelligence and Expert Systems- Prentice Hall of India.

Reference Books:
3. Artificial Intelligence, Winston, Patrick, Henry, Pearson Education  
4. Artificial Intelligenece by Gopal Krishna , Janakiraman
**UNIT I: INTRODUCTION:**
Image formation model, Spatial & Gray level resolution, Image enhancement in special domain: Piecewise transformation functions, Histogram equalization, Histogram specification, image averaging, spatial filters- smoothing and sharpening, Laplacian filter, Canny edge detector.

**UNIT II: IMAGE ENHANCEMENT IN FREQUENCY DOMAIN & IMAGE SEGMENTATION:**
2D discrete fourier transform & its inverse, filtering in frequency domain, Ideal & Gaussian low pass filters, High pass filtering, FFT, Line detection, Edge detection, Edge linking & boundary detection, Thresholding, Region based segmentation.

**UNIT III: MORPHOLOGICAL IMAGE PROCESSING:**
Logic operations involving binary image, Dialation & Erosion, Opening & Closing, Applications to Boundary extraction, region filling, connected component extraction.

**UNIT IV: IMAGE COMPRESSION:**
Coding redundancy- Huffman coding, LZW coding, run length coding, Lossy compression- DCT, JPEG, MPEG, video compression.

**UNIT V: IMAGE REPRESENTATION & 3D:**
Boundary descriptors, Shape numbers, Texture, Projective geometry, Correlation based and feature based stereo correspondence, shape from motion, optical flow.

**Name of Text Books:-**
2. Sonka and Brooks, Image Processing, TSP ltd,

**Name of Reference Books:-**
1. Jain and Rangachar, Machine Vision, MGH.
UNIT I: PIPELINE:
Linear pipeline processor: Nonlinear pipeline processor, Instruction pipeline design, Mechanisms, Dynamic instruction scheduling, Arithmetic pipeline design, Super-scalar processors, VLIW architecture.

UNIT II: MEMORY HIERARCHY & I/O ORGANIZATION:
Cache memories, Cache coherence, High bandwidth memories, High bandwidth I/O, Disk I/O, Bus specifications and standards.

UNIT III: PARALLEL COMPUTER MODELS & PROGRAM PARALLELISM:
Classification of Machines, SISD, SIMD & MIMD, Condition of parallelism, data and resource dependencies, Program partitioning & scheduling, grain size latency, control flow versus data control, data flow architecture.

UNIT IV: SYNCHRONOUS PARALLEL PROCESSING:
Vector instruction types, vector access memory schemes, vector and symbolic processors, SIMD architecture, SIMD parallel algorithms, SIMD computers and performance enhancements.

UNIT V: SYSTEM INTERCONNECTION:
Network properties and routing, static interconnection networks, dynamic interconnection networks, Multiprocessor system interconnection, Multistage & combining networks.

Text Books:-
1. Flynn, computer Architecture: Pipelined and parallel processor design, JB, Boston.

Reference Books:-
UNIT-I  INTRODUCTION:

UNIT-II  COMPRESSION TECHNIQUES:

UNIT-III  MULTIMEDIA SYSTEMS ARCHITECTURE:

UNIT-IV  MULTIMEDIA INFORMATION MANAGEMENT:

UNIT-V  VIRTUAL REALITY:
Introduction to Virtual Reality and Virtual Reality Systems, Related Technologies: Tele-operation and Augmented Reality Systems Interface to the Virtual World-Input: Head and hand trackers, data globes, haptic input devices. Interface to the Virtual World- Output: Stereo display, head-mounted display, auto-stereoscopic displays, holographic displays, haptic and force feedback. VRML Programming; Modeling objects and virtual environments Domain Dependent applications: Medical,Visualization, Entertainment, etc.

Text Books :-
2. Multimedia Concept & Practice, Hartman & Carey, PHI
CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VII                  Branch: Information Technology.
Subject: Cryptography & Network Security.   Code:  322755 (22)
Total Theory Periods: 50      Total Tutorial Periods: Nil
Total Marks in End Semester Exam: 80
Minimum number of class tests to be conducted: 02.

UNIT-I  FOUNDATIONS OF CRYPTOGRAPHY AND SECURITY:-
Cryptography: Substitutions and Permutations, Modular Arithmetic, Euclid's Algorithm,
Finite Fields, Polynomial Arithmetic. Design Principle of Block ciphers: Theory of Block
Cipher Design. Cipher Network Structures, DES and Triple DES, Modes of Operation
(ECB, CBC, OFB, CFB) , Strength ( or Not) Of DES

UNIT-II  BLOCKS CIPHER ALGORITHMS:-
IDEA, CAST, Blowfish, Twofish, Rijndael (AES). Pseudo Random Numbers and stream
Ciphers: Pseudo random sequences, Linear Congruential Generators, Cryptographic
Generators, Design of Stream Cipher, RC4, RC5.

UNIT-III  PUBLIC KEY CRYPTOGRAPHY:-
Prime Numbers and Testing for Primality, Factoring Large Numbers, Discrete Logarithms
RSA, Diffie- Hellman, ElGamal , Introduction of Elliptic acre Cryptosystems Key
Management , Key Exchange Algorithms, Public – Key Cryptography Standards. Hashes
and Message Digests: Message Authentication, MD5, SHA-1, RIPEMD, HMAC

UNIT-IV  DIGITAL SIGNATURES, CERTIFICATES, AND STANDARDS:-
Digital Signature Standard (DSS and DSA). Public key Infrastructure, Digital Certificates
and Basics of PKCS Standards. Authentication: Kerberos V 4 and V 5, X.509
Authentication Service. Electronic Mail Security: Pretty Good Privacy (PGP), S /MIME,
X.400. IP and Web Security Protocols: IPSec and Virtual Private Networks, Secure
Sockets and Transport Layer ( SSL and TLS).

UNIT-V  SYSTEM SECURITY: -
Computer Virus, Firewall and Design Principles, Reference: Chapter 18 , 19, & 20 of
Systems, Secure Electronic Transaction (SET), Protocols (CyberCash, iKey) Ecash ( DigiCash ), Smart Card Based Systems.

Text Books:
Cryptography and Network Security, William Stalling, PHI.

Reference Books:-
UNIT I - INTRODUCTION
Definition of fault tolerance, Redundancy, Applications of fault-tolerance, Fundamentals of dependability.

UNIT II- ATTRIBUTES
Reliability, availability, safety, Impairments: faults, errors and failures, Means: fault prevention, removal and forecasting

UNIT III- DEPENDABILITY EVALUATION
Common measures: failures rate, mean time to failure, mean time to repair, etc. Reliability block diagrams, Markov processes

UNIT IV- REDUNDANCY
Hardware redundancy, Redundancy schemes, Evaluation and comparison, Applications, Information redundancy, Codes: linear, Hamming, cyclic, unordered, arithmetic, etc.
Encoding and decoding techniques, Applications, Time redundancy

UNIT V- PROGRAMMING
Software fault tolerance, Specific features, Software fault tolerance techniques: N-version programming, recovery blocks, self-checking software, etc.

Text Books
3. Jalote, P.

Reference Book
1. Johnson, B.W., Design and Analysis of Fault-Tolerant Systems, Addison Wesely
2. Leveson, Nancy G., Safeware, system safety and computers, Addison Wesely.
Unit -I INTRODUCTION & SYNTACTIC PROCESSING


Unit -II SEMANTIC INTERPRETATION


Unit -III PRAGMATICS


Unit –IV NATURAL LANGUAGE GENERATION

Introduction to language generation, an architecture for generation, surface realization, systemic grammar, functional unification grammar, discourse planning.

Unit -V MACHINE TRANSLATION

Language Similarities and Differences, transfer metaphor, syntactic transformations, lexical transfer, idea of Interlingua, direct translation, using Statistical Techniques

Text Books:
1. Speech and Language Processing, by Jurafsky, D. & Martin, J.H.
2. Natural Language Understanding (2nd ed.), Allen, J

Reference Books:
2. An Introduction to Language (5th ed.), Fromkin, V & Rodman, R
3. Natural Language Processing for Prolog Programmers, by Covington, M A
4. Natural language processing in Prolog: an introduction to computational linguistics, By Gazdar, G & Mellish, C
UNIT I
THE EXTENDED ENTITY RELATIONSHIP MODEL AND OBJECT MODEL:
The ER model revisited, Motivation for complex data types, User defined abstract data
types and structured types, Subclasses, Super classes, Inheritance, Specialization and
Generalization, Constraints and characteristics of specialization and Generalization,
Relationship types of degree higher than two.

UNIT II.
OBJECT-ORIENTED DATABASES:
Overview of Object-Oriented concepts, Object identity, Object structure, and type
constructors, Encapsulation of operations, Methods, and Persistence, Type hierarchies
and Inheritance, Type extents and queries, Complex objects; Database schema design for
OODBMS; OQL, Persistent programming languages; OODBMS architecture and storage
issues; Transactions and Concurrency control, Example of ODBMS

UNIT III.
OBJECT RELATIONAL AND EXTENDED RELATIONAL DATABASES:
Database design for an ORDBMS - Nested relations and collections; Storage and access
methods, Query processing and Optimization; An overview of SQL3, Implementation
issues for extended type; Systems comparison of RDBMS, OODBMS, ORDBMS

UNIT IV.
PARALLEL AND DISTRIBUTED DATABASES AND CLIENT-SERVER ARCHITECTURE:
Architectures for parallel databases, Parallel query evaluation; Parallelizing individual
operations, Sorting, Joins; Distributed database concepts, Data fragmentation,
Replication, and allocation techniques for distributed database design; Query processing
in distributed databases; Concurrency control and Recovery in distributed databases. An
overview of Client-Server architecture

UNIT V
DATABASES ON THE WEB AND SEMI STRUCTURED DATA:
Web interfaces to the Web, Overview of XML; Structure of XML data, Document schema,
Querying XML data; Storage of XML data, XML applications; The semi structured data
model, Implementation issues, Indexes for text data. Enhanced Data Models for
Advanced Applications: Active database concepts. Temporal database concepts.;
Spatial databases, Concepts and architecture; Deductive databases and Query
processing; Mobile databases, Geographic information systems.

Text Books:
1. Rajesh Narang, Object Oriented Interfaces and Databases, Prentice Hall of India

Reference books:
1. Elmasri and Navathe, Fundamentals of Database Systems [4e], Pearson Education
   Learning.
4. C.J.Date, Longman, Introduction To Database Systems, Pearson Education
NOTE for Students to Follow strictly :-

- Every **two to three students** should form a group and should develop a software that could be developed with in **one month** of time.

- The groups should prepare a **softcopy as well as hardcopy** of the documentation as per phases given below.

- Every student in the group should have a copy of the documentation

- Every student should get his own copy of the documentation properly checked from the **Teacher In-charge**, after every phase of development given below.

- Before the Final Practical examinations, every individual student should submit his own hardcopy of the documentation in a **Punched Cardboard File Only**.

- One **CD** of the project and its documentation (softcopy), from every group should be submitted during **final submissions**.

- During **Final Submissions**, every copy of the documentation should be accompanied by a **Submission Certificate** duly signed by the **Teacher In-charge and Head of Department**.

### Planning Phase

1. **Problem Statement :-**
   a. Description of the present situation.
   b. Problem constraints (Manpower, Software and Hardware).
   d. Statement and brief description of Requirements (Functions, Hardware, Software and User interface) of the overall product.
   e. List and Description of the users and their role, who will use the software product.

2. **Solution strategy :-**
   a. List and brief description of all possible solutions.
   b. List and brief description of all accepted solutions.
   c. List and brief description of all rejected solutions.
3. Development process:-
   a. Life cycle model for the project.
   b. Team structure for the project (Details of team members also needed).
   c. Software Configuration Management :-
      i. List and brief description of non-changeable objects that would contribute to the software phase wise.
      ii. List and brief description of changeable objects that would contribute to the software phase wise.
   d. Software Quality assurance :-
      i. List and brief description of quality attributed decided for evaluating the software product phase wise.
      ii. List and brief description of the validations (are we making the product right ?) and verifications (are we making the right product? ) phase wise.
   e. Risk management :-
      i. List and brief description of any kind of Risks that may occur phase wise.
      ii. List and brief description of any possible solutions for the above mentioned risks.
4. Software metrics :-
   a. Deciding the complexity category of the product under development.
   b. Estimating Lines of Code needed for the complete development of the product.
   c. Calculating Programmer months for the project.
   d. Calculating the development time for the project.
   e. Calculating the Average staffing level for the project.
   f. Using COCOMO model for performing cost estimation for the product.
5. Review of the Planning Phase :-
   a. Points and brief description of the reviews conducted and report of the results obtained.

Analysis and Design Phase

1. Analysis document for the product :-
   a. Data Dictionary :- List and brief description of all the components to be used in ERD, DFD and STD.
   b. Data Object Description document :- Entity Relationship Diagram (ERD)
   d. Control Specification document:- State Transition Diagrams (STD)
2. Creating Designs document :-
   a. Data Design :- Description of the data objects and suggested algorithm.
   b. Architectural Design :- Description of how to encapsulate the data with data structures and modules.
   c. Interface Design :- Description of Interfaces to be created between various modules and between user and program.
d. Procedural Design :- Using flow charts and decision tables the entire system is explained.

3. Preliminary design review :-
   a. Statements of Reviews done on the initial designs and comments for improvement, if necessary.

4. Test Plan document :-
   a. List and brief description of Functional Tests (Black-Box testing) to be conducted and results expected.
   b. List and brief description of Structural Tests (White-Box or Glass-Box testing) to be conducted and results expected.
   c. List and brief description of Performance Tests to be conducted and results expected.
   d. List and brief description of Stress Tests to be conducted and results expected.

5. Critical Design review :-
   a. Statements of reviews done on the final designs, listing out important points, if necessary, to be remembered during the implementation phase.

6. Milestones, Walkthroughs and Inspection document :-
   a. Setting up Milestones for the implementation and testing phases.
   b. Setting up Walkthrough schedules for the implementation phase.
   c. Setting up Inspection schedules for the implementation phase.

Implementation Phase

1. Coding :- Here the actual coding is done according to the designs created and standards decided.
2. Coding standards :- Standards need to be followed related to the variable declarations and use.
3. Internal documentation:- Here small descriptions in the form of comments in the program code is used, describing the meaning of the code, modules or operations performed.
4. Error documentation :- List and brief description of errors displayed with their meanings and causes.
5. Unit testing :- Testing of individual modules and required code areas are done by using coding that would display temporary results. Those results are evaluated for correctness of code. A table is created stating the test criteria and results.
6. Validation and Verification :- A table is created stating the validation and verification activities performed on the code and results found.
7. Review document :- According to the milestones set, the reviews, walkthroughs and inspections are done and a document describing the above process and results found, is created.

Testing Phase

1. Testing table :- The tests decided in Test plan document are conducted and a table is created showing the details of the test performed, expected results and actual found results.
2. Test report :- A summary of the Test report is created and suggestions for the steps to be taken further are listed with brief description.
**User Manual**

1. A document is created describing from the user point of view, how to use and trouble shoot the software product.
2. Different documents should be created for different category of users of the product.
3. A document describing the installation procedures.
4. Frequently Asked Questions and answers document is created from the user point of view.
5. Do's and Don'ts for the user.
7. Contact details for further assistance.
Suggested List of Experiments (but should not be limited to):

(i) Write a prolog program to find the rules for parent, child, male, female, son, daughter, brother, sister, uncle, aunt, ancestor given the facts about father and wife only.

(ii) Write a program to find the length of a given list

(iii) Write a program to find the last element of a given list

(iv) Write a program to delete the first occurrence and also all occurrences of a particular element in a given list.

(v) Write a program to find union and intersection of two given sets represented as lists.

(vi) Write a program to read a list at a time and write a list at a time using the well defined read & write functions.

(vii) Write a program given the knowledge base,

If x is on the top of y, y supports x.
If x is above y and they are touching each other, x is on top of y.
A cup is above a book. The cup is touching that book. Convert the following into wff’s, clausal form; Is it possible to deduce that ‘The book supports the cup’.

(viii) Write a program given the knowledge base,

If Town x is connected to Town y by highway z and bikes are allowed on z, you can get to y from x by bike.
If Town x is connected to y by z then y is also connected to x by z.
If you can get to town q from p and also to town r from town q, you can get to town r from town p.
Town A is connected to Town B by Road 1. Town B is connected to Town C by Road 2.
Town A is connected to Town C by Road 3. Town D is connected to Town E by Road 4.
Town D is connected to Town B by Road 5. Bikes are allowed on roads 3, 4, 5.
Bikes are only either allowed on Road 1 or on Road 2 every day. Convert the following into wff’s, clausal form and deduce that ‘One can get to town B from town D’.

(ix) Solve the classical Water Jug problem of AI.

(x) Solve the classical Monkey Banana problem of AI.

(xi) Solve the classical Crypt arithmetic problems such as DONALD + GERALD = ROBERT of AI.

(xii) Solve the classical Missionary Cannibals problem of AI.

(xiii) Solve the classical Travelling Salesman Problem of AI.

(xiv) Solve the classical Blocks World Problem of AI.

(xv) Write a program to search any goal given an input graph using AO* algorithm.

List of Equipments/Machine required:

(i) PC with Windows xp

(ii) Visual prolog compiler

Recommended Books:

(i) Ivan Bratko : Logic & prolog programming.
Experiments can be done either with J2EE or .NET Technologies.

Suggested List of Experiments (but should not be limited to):

1. To Study various features of IDE : VISUAL STUDIO .NET or J2EE IDE( e.g. NetBeans, JDEveloper, JBuilder, JAvaStudioCreator)
2. Design simple web based calculator to implement Addition, Subtraction and Multiplication and Division.
3. Create a login form which performs validations at the client and check for the correct password at the server with the help of a database.
4. create an application which performs database handling( add, delete, update ) operations from the client browser.
5. Demonstrate use of Data Environment, add tables and queries, place field on form, report etc.
6. Create simple Notepad application, which contains menus, Rich Text Box, Common Dialogs Box, formatted text, using toolbar and Replace text, window, status bar and scroll bar.
7. Design a complete application using all the .net or J2EE Technologies.

Text Books :

1. Black Book (VB .NET)
2. Complete Reference (VB .NET)
3. VB .NET Microsoft Press
5. Java How To Program – Dietel & Dietel ( Pearson Education )
6. JSP by Hans Berbsten (O'Reilly )
Guideline for Minor Project

Allocation of project:

1. Information regarding broad area must be made available to the students well in advance (may be during previous semester).
2. Information must cover following parameters.
   i. **Broad area**: Subject or expertise/application area.
   ii. **Required skills**: Knowledge of subject(s), software, tools & other characteristics.
   iii. **Type of project**: Hardware, software, design, survey, study based etc.
   iv. **Guides available**: Name of Guide (S) from Department & Institute.
   v. **Other related information** depending upon specific branch & institute.
3. It is also recommended to give proper counseling to pick up suitable project.
4. Students must get chance to select projects as per their choice or decided mutually between students and department faculty (HoD) concern.
5. One project group must contain maximum three students.

Monitoring of project:

1. It is recommended to give projects as per the specializations of existing faculty of the department instead of outside person/agency.
2. Project must be allocated, developed and monitored by department / institution itself, but not by outside agencies.
3. Regular review by guide is recommended to ensure development & contribution of students.

Internal Evaluation & Submission of project:

1. Evaluation of project would be as per the examination scheme of the University, which is based on internal as well as external evaluation.
2. Internal assessment requires submission of project report for getting approved by the concern authority. However printing and binding would be as per the conventional format.
3. Evaluation will be based on Live demonstration / presentation and Viva.
4. Final submission of project is expected as,
   - One copy to the Institution central library,
   - One copy to the department.

External Evaluation:

External assessment of project would be like conduction of practical exams of University, and must be executed as per the norms of practical exams.

*NOTE: Completion of Project outside the department/Institution should not be encouraged.*
Unit I
Innovation: innovation- an abstract concept; creativity, innovation and imagination; types of innovation -
classified according to products, processes or business organizations.

Unit II
Entrepreneurship: who is an entrepreneur? Entrepreneurship- A state of Mind, Emergence of
entrepreneur; Role of Entrepreneur; A Doer not a Dreamer- Characteristics of an entrepreneur; Factors
affecting entrepreneurial growth – Social, cultural, personality factors, psychological and Social Factors.
Impact of Entrepreneurship for sustainable development.

Unit III
Difference between entrepreneur and entrepreneurship, Difference between entrepreneur and intra-
preneur, Common Entrepreneurial competencies/Traits; Entrepreneurship stimulants, Obstacles
inhibiting Entrepreneurship; Types of entrepreneurs, Functions of an entrepreneur.

Unit IV
Identification of Business Opportunities: Introduction, Sources of Business of Product Ideas, Steps in
Identification of Business opportunity and its SWOT Analysis.

UNIT-V
Techno-Economic Feasibility of the project: Introduction, Techno- Economic feasibility of the Project,
Feasibility Report, Considerations while preparing a Feasibility Report, Proforma of Feasibility Report,
Role of Institutions and entrepreneurship.

Text and Reference Books:
1. Competing through Innovation-Bellon & Whittington, Prentice Hall of India
3. Entrepreneurship- Rober D Hisrich, Peters, Shepherd- TMH
4. Entrepreneurship in Action- Coulter, Prentice Hall of India
5. Entrepreneurship Management and Development – Ajith Kumar, HPH
6. Fundamentals of entrepreneurship- Mohanty, PHI