FOUR YEAR B.TECH. DEGREE COURSE

Scheme of Instruction and Examination

(Effective from 2010-2011)

II B.Tech (IT) – I Semester **Scheme: 2010**

S. No	Subject	Abbreviation	Credits	Scheme of Instruction periods/week			Duration of End Exam (Hours)	Scheme of Examination		
								Maximum Marks		
				L	D/T	P		End Exam	Internal Assessment	Total
I	**Theory**									
1.	Managerial Economics & Financial Accountancy	MEFA	**4**	**4**	–	–	3	70	30	100
2.	Object Oriented Programming	OOP	**5**	**4**	**1**	–	3	70	30	100
3.	Switching Theory and Logic Design	STLD	**5**	**4**	**1**	–	3	70	30	100
4.	Discrete Structures & Graph Theory	DSGT	**5**	**4**	**1**	–	3	70	30	100
5	Computer Organization & Architecture	COA	**4**	**4**	–	–	3	70	30	100
6.	Programming Methodology & Data Structures	PMDS	**4**	**4**	-	–	3	70	30	100
7.	Soft Skills	SS	**2**	**1**	**2**	–	–	–	100	100
II	**Practical**									
8.	Basic Electronics Lab	BE (P)	**2**	–	–	**3**	3	70	30	100
9.	Object Oriented Programming Lab	OOP(P)	**2**	–	–	**3**	3	70	30	100
10	Programming Methodology & Data Structures Lab	PMDS(P)	**2**	–	–	**3**	3	70	30	100
	Total		**35**	**25**	**5**	**9**		**630**	**370**	**1000**

MANEGERIAL ECONOMICS & FINANCIAL ACCOUNTANCY (MEFA)
(Common to II B.Tech I Semester CSE, IT & ECE)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To enable the students to know the basic concepts of accountancy, budget, cost analysis and theoretical foundation of management science.
- To facilitate the students to gain the knowledge regarding management and organization behavior, production etc.

Unit-1

Introduction to Managerial Economics: Definition – Nature and Scope of Managerial Economics – Demand Analysis – Types of Demand – Demand Determinants – Law of Demand – Its assumptions and exceptions.

Unit-2

Elasticity of Demand: Definition –Types – Price – Income – Cross Elasticities of demand – Practical Significance of price elasticity of demand – Measurement of price elasticity of demand – Demand forecasting – Importance – Factors – Methods of Demand Forecasting.

Unit-3

Theory of production and cost analysis: Meaning of production function – Isoquants – Isocosts – Practical Importance – The law of diminishing Marginal Returns – Internal and External Economies of scale.

Cost Analysis – Cost concepts – Fixed and Variable Costs – Cost out put relation ship – Break Even Analysis – Importance – Limitations and Managerial uses of Break Even Analysis.

Unit-4

Market Structures: Types of Competitions – Features of Perfect Competition – Monopoly – Monopolistic Competition – Price output determination in case of perfect competition and Monopoly.

Unit-5

Capital and its Significance: Types of Capital – Estimation of fixed and working capital requirements – Methods and sources of raising fixed and working capital

Unit-6

Business Environment: Types of Business Organizations – Formation and evaluation of sole trader – Partnership firm – Partnership Deed – Joint Stock Companies – Features – Private and Public Limited Companies formation – Merits – Demerits – Differences – Prospectus.

Unit-7

Principles of Accountancy: Introduction to Accountancy – Double Entry System of Book Keeping – Meaning – Scope – Advantages – Journal Entries – Ledger – Subsidiary Books – Preparation of Trial Balance.

Unit-8

Preparation of Final Accounts: Trading Account – Profit & Loss Account – Balance Sheet with adjustments – (Final Accounts problems should be given)

Text Books:

1) Varshiney and Maheswari, Managerial Economics, Sultan Chand & Co, New Delhi
2) Y.K Bhushan, Business Organization & Management, S Chand & Co., New Delhi.
3) S.P Jain and K.L Narang, Financial Accounting - B.com First Year Andhra Pradesh Universities, Kalyani Publishers, New Delhi.

Reference Books:

1) Shukla & Grewal, Advanced Accountancy, S.Chand & Co., New Delhi
2) M.C Shukla, Business Organization and Management, S.Chand & Co., New Delhi.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students are able to think and analyze the critical problems in accountancy and production management.
- Students can enhance their leadership qualities and they learn to run an organization and entrepreneur.

OBJECT ORIENTED PROGRAMMING (OOP)
(Common to II B.Tech I Semester CSE & IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T)/week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students understand the features of object-oriented design and familiarize them with virtual functions, templates and exception handling.
- To enable the students solve various engineering problems in C++ programming language.

Unit-1

Introduction to C: Overview of C, Access modifiers, Storage Class specifiers, Arrays- Single dimensional array, array pointers, two-dimensional and multidimensional arrays, Pointers, Functions, Structures, Unions, Enumerations, User-defined data types.

Unit-2

Introduction to C++ : The Origins of C++, Programming Paradigms, Object Oriented Programming concepts, C++ fundamentals – Sample C++ Program, Types of tokens, identifiers, type casting, I/O Operators, operators and their precedence, memory management operators, Declaring Local Variables

Unit-3

Introduction to C++ classes: Class, Objects, Scope resolution operators, access specifiers, Local classes, Nested classes, assigning objects, defining inline functions within a class, classes and structures and unions are related, Friend classes and Friend functions.

Unit-4

Constructors and Destructors: Constructors – Types of Constructors, static class members – static data members, static member functions, Destructors, Execution of constructors and destructors, Passing objects to functions, Returning objects, Object assignment

Unit-5

Inheritance: various types of Inheritances, abstract classes, constructors in derived classes. **Files** – stream – steps of file operations, Manipulators, working with various types of files.

Unit-6

Virtual Functions and Polymorphism: Introduction to pointers, pointers to objects, this pointer, pointers to Derived classes, virtual functions, pure virtual functions.

Unit-7

Templates: various types of templates, class templates, class templates with multiple parameters, function templates, function templates with multiple parameters, overloading of templates functions, member function templates.

Unit-8

Exception Handling & Manipulating Strings: principles, Try, Catch, and Throw, Catching multiple Exceptions, Rethrowing, Exceptions in Constructors, Destructors, operator overloading, Inheritance, Templates, creating String objects, manipulating string objects.

Text books:

1. Herbert Schildt [2007], *The Complete Reference C++*.
2. E. Balaguruswamy [2008], [4th Edition], *Object Oriented Programming with C++*, TMH.

Reference books:

1. Herbert Schildt [2007], *Teach Yourself C++*, TMH.
2. M.P. Bhave and S.A. Patekar [2008], *Object Oriented Programming with C++*, Pearson Education.
3. Robert Lafore [2008], *Object Oriented Programming in Turbo C++*.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students are able to use object oriented programming language effectively.
- Students will be able to design and develop C++ programs for complex problems.

SWITCHING THEORY AND LOGIC DESIGN (STLD)
(Common to II B.Tech I Semester CSE & IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T)/week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students learn different number systems, digital logic, simplification and minimization of Boolean functions.
- To enable the students design counters, sequential circuits, combinational circuits.

Unit-1
Number System & Binary Codes: The Decimal, Binary, Octal, Hexadecimal Number System, Number Base Conversions, Complements, Binary Arithmetic in Computers, Weighted Binary codes, Non Weighted Binary codes, Error Detecting Codes, Error Correcting Codes, Parity Checking.

Unit -2
Boolean Algebra & Minimization of Boolean Functions: Basic Definitions, Axiomatic Definition of Boolean Algebra, Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Other Logic Operations, Digital Logic gates

Unit-3
Simplification of Boolean Functions: The Map Method, Two, Three, Four, Five and Six variable maps, Product of Sums Simplification, NAND and NOR Implementations, Other two Level Implementations, Don't Care Conditions, The Tabulation Method, Determination of Prime Implicants, Selection of Prime Implicants.

Unit -4
Combinational Logic: Introduction, Design Procedure, Adders, Subtractors, Code Conversion, Analysis Procedure, Multilevel NAND Circuits, Multilevel NOR Circuits, Exclusive-or and Equivalence Functions

Unit-5
Combinational Logic with MSI & LSI: Binary Parallel Adder, Decimal Adder, Magnitude Comparator, Decoders, Multiplexers, Read Only Memory (ROM), Programmable Logic Array (PLA),

Unit -6
Sequential Logic: Introduction, Flip Flops, Triggering of Flip Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Flip Flop Excitation Tables, Design Procedure, Design of Counters, Design with State Equations.

Unit -7
Registers: Introduction, Registers - Registers with parallel load, Sequential Logic Implementation, Shift Registers - Serial Transfer, Bi-directional Shift Register with parallel load, Serial Addition

Unit-8
Counters & Memory Unit: Ripple Counters - Binary Ripple Counter, BCD Ripple Counter, Synchronous Counters - Binary Counter, Binary Up-Down Counter, Johnson Counter, Memory Unit, Types of Registers, Read and Write operations.

Text books:

1. M.Morris Mano [2007], *Digital Logic and Computer Design*, Pearson Education.
2. Zvi Kohavi [2008], *Switching and Finite Automata Theory*, TMH .

Reference books:

1. F.J.Hill and G.R.Peterson [1981], [3rd Edition], *Introduction to switching theory and logic design*.
2. Donald D. Givone [2006], *Digital Principles and Applications*, Tata Mc Graw Hill.
3. Thomson [1999], [4th Edition], *Fundamentals of Logic Design*.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students understand the fundamentals of digital logic and are able to design circuits using combinational and sequential logic.

DISCRETE STRUCTURES & GRAPH THEORY (DSGT)
(Common for II B.Tech I Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T)/week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students learn logical thinking and be able to apply enumerating techniques.
- To develop an understanding of functions and relations.
- To enable the students understand graph theoretic techniques.

Unit-1

Mathematical Logic – Statements & Notation, Connectives, Well Formed Formulas, tautologies, Equivalence & implications, Duality law, formulas with distinct truth tables, complete set of connectives, other connectives.

Unit-2

Normal forms, Theory of inference for statement calculus, Predicate Calculus, Inference – Theory of predicate calculus.

Unit-3

Graphs: Basic Concepts, Isomorphism and Sub graphs, Trees and Their Properties, Spanning Trees, Directed Trees, Binary Trees.

Unit-4

Planar Graphs, Euler's Formula, Multigraphs and Euler Circuits, Hamiltonian Graphs, Chromatic Numbers, The Four-Color Problem.

Unit-5

Relations and Digraphs: Relations and Directed Graphs, Special Properties of Binary Relations, Equivalence Relations, Ordering Relations, Lattices, Enumerations.

Unit-6

Digraphs: Operations on Relations, Paths and Closures, Directed Graphs and Adjacency Matrices, Warshalls algorithm

Unit-7

Elementary Combinatorics: Combinatorics – Permutations & Combinations, Enumeration of Combinations and Permutations without repetition

Unit-8

Recurrence Relations: Generating Functions of Sequences, Calculating Coefficients of Generating Functions, Recurrence Relations, Solving Recurrence Relations by Substitution and Generating Functions, The Method of Characteristic Roots, Solutions of Inhomogeneous Recurrence Relations.

Text books:

1. Trembly.J.P and manohar.R [2007], *Discrete mathematical structures with applications to computer science*, Mc-Graw-Hill International Editions.
2. Joe L.Mott, Abraham Kandel and Theodore P.Baker [2008], [2nd Edition], *Discrete Mathematics for Computer Scientists and Mathematicians*, PHI.

Reference books:

1. Liu [2004], *Elements of discrete mathematics*, McGraw-Hill.
2. Ralph P.Grimaldi [2006], [5th Edition], *Discrete and Combinational Mathematics-An Applied Introduction*, Pearson Education.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students are able to check the validity of statements by applying logic and understand the differences between relations and functions.
- Students are able to solve various engineering problems using graph theoretic concepts.

COMPUTER ORGANIZATION AND ARCHITECTURE (COA)
(Common for II B.Tech I Semester CSE and IT)

Scheme : 2010 **Internal Assessment 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration:3hrs**

Course Objectives:

- To make the students understand the structure of computers and internal organization of different units like memory, I/O devices, registers.
- To study in detail the operation of arithmetic unit including the algorithms and implementation of fixed and floating point addition, subtraction, multiplication and division operations.

Unit - 1

Programming the Basic Computer: Introduction, machine language, assembly language, assembler, Loops, programming arithmetic and logic operations, subroutines, Input/output programming.

Unit-2

Micro Programmed Control: Control memory, address sequencing, micro program example, Design of control unit.

Unit – 3

Basic Computer Organization and Design: Instruction codes, computer registers and instructions, timing and control, instruction cycle, memory reference instructions, Input/output and interrupt, complete computer description, Design of basic computer, design of accumulator logic.

Unit - 4

Central Processing Unit: Introduction, general register organization, stack organization Instruction formats, addressing modes, data transfer and Manipulation, program control, RISC AND CISC.

Unit - 5

Pipeline and Vector Processing: Parallel processing, pipelining, arithmetic and instruction Pipeline, RISC pipeline, vector processing, array Processors.

Unit-6

Computer Arithmetic: Introduction, addition and subtraction, multiplication Algorithms, division algorithms, Data Representation, Fixed point representation.

Unit - 7

Input/output Organization: Peripheral devices, input/output interface, asynchronous Data transfer, modes of data transfer, priority interrupt, DMA, input/output processor, serial communication.

Unit-8

Memory Organization: Memory hierarchy, main memory, auxiliary memory, Associative memory, cache memory, virtual memory, Memory management hardware.

Text books:

1. M. Morris Mano [2008], [3rd Edition], *Computer system architecture*, Pearson Education.
2. Willam Stallings [2003], [6th Edition], *Computer Organization and Architecture Desinigning for performance,* Pearson [PHI].

Reference books:

1. Andrew. S. Tannenbaum [2007], [Fifth Edition], *Structured computer organization*, Pearson Edition.
2. Hayes John .P [1998], *Computer architecture & organization*, MGH.
3. Hamacher Vcarl & Vranesie Zvonko [2002], [5th Edition], *Computer Organization*, TMH.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students are able to describe computer arithmetic, CPU design and identify high performance architecture design.
- Develop independent learning skills and be able to learn more about parallel and vector processing.

PROGRAMMING METHODOLOGY & DATA STRUCTURES (PMDS)
(For II B.Tech I Semester IT)

Scheme: 2010 **Internal Assessment: 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To develop proficiency in the specification, storage representation, and implementation of Data Types and Data Structures and to get a good understanding of applications of Data Structures like stacks, queues, trees, etc.

Unit – 1

Programming Methodologies: Data Types, Control structures, Recurrence and Iteration. Data Structures- Definition, Classification of Data structures, Sequential storage representation – Arrays, Applications of arrays – Linear Search, Binary Search, Bubble Sort.

Unit-2

Linked List : Pointer and Linked storage representation, Types of Linked List – Single linked list, Double linked list without and with header nodes, Circular linked list ,Operations on linked list- Traversing, Searching, Insertion and Deletion. Applications of linked list – Polynomial manipulation.

Unit – 3

Linear Data Structures - Stacks : Representation of Stacks Using sequential storage and Using Linked allocation. Operations on Stacks, Application of Stacks- Recursion, Polish notations, Conversion of infix to post fix notation, Evaluation of postfix expression.

Unit-4

Linear Data Structures - Queues: Queues, Representation of Queues using sequential and linked allocation, operations on queues, circular queue.

Unit – 5

Nonlinear Data Structures: Trees – Basic terminology, Binary trees, Representation of Binary trees in memory using arrays and linked list. Operations on binary trees- Insertion, deletion and traversing-preorder, inorder and post order. Applications of binary trees. Threaded binary trees, AVL trees and its operations.

Unit – 6

Special Trees: Splay tress, B-Trees and their operation.

Sorting: Insertion sort, Shell sort, Heap sort, Quick sort, Selection sort, Merge Sort.

Unit – 7

Priority Queues (Heaps): Model, simple implementations, Binary heap, applications of priority queues, d-heaps, leftist heaps, skew heaps, Binomial queues.

Unit-8

Hashing Techniques: Definition, Hash function, Open hashing (separate chaining), Closed hashing(open addressing) – linear probing, quadratic probing, double hashing, Rehashing, Extendible hashing.

Text books:

1. JEAN PAUL TREMBLAYA and PAUL G.SORENSON [2007], *An Introduction to Data Structures With Applications*, TMH.
2. MARK ALLENWEISS [2008], *Data Structures and Algorithm Analysis*, PEARSON EDUCATION.

Reference books:

1. N.KASIVISWANATH [2008], *Data Structures Using C++*, LAXMI PUBLICATIONS (P) LTD.
2. E.BALAGURUSWAMY [2008], *Object Oriented programming with C++*.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions

Course Outcomes:

- Students are able to choose the appropriate data structure and implement it to store data for a given problem by considering various problem characteristics such as the data size, the type of operations, etc.

SOFT SKILLS (SS)

(Common for II B.Tech. I Semester All Branches)

Scheme : 2010 **Internal Assessment : 100**
Contact Periods: (1L+2T)/week
Credits: 2

Course Objectives:

- Become self-confident individuals by mastering inter-personal skills, team management skills, and leadership skills and take part effectively in various selection procedures adopted by the recruiters
- To improve creativity solve problems and take effective decisions.

Self Awareness
Importance of Self Awareness – Johari Window in Self Awareness – four quadrants of Johari Window - Open or Arena Quadrant – Blind Spot quadrant – Hidden or Facade Quadrant – Unknown Quadrant.

Goal Setting
Importance of Goal Setting - Difference between Goals and Dreams – Importance of writing Goals – S.M.A.R.T Goals – Intermediate or Short term Goals – Medium Term Goals – Long Term Goals – How to achieve Goals.

Time Management
Importance of Time – what's your style – A few Myths – Prioritize – Procrastination – the thief of time – carving the cock – How to delegate effectively – the art of anticipating – learning to say NO – Plugging time leaks power - Tools for Time Management – Scheduling.

Inter Personal Behavioral Styles
Importance of Interpersonal Skills – Identifying Yourself - Characteristics of Socializer, Relater, Director, Thinker – Identifying others - Communication with others – Adapting yourself to others
Strokes
Importance of Strokes – Art of giving Strokes – your style – conditional and unconditional Strokes – Positive and Negative Strokes – Giving Strokes – Taking Strokes – Asking for Strokes – Refuse to give Strokes.

Assertiveness
Understanding Assertiveness – Three styles Passive, Assertive, Aggressive – Importance of Self Awareness – Self Confidence – Ability to say NO – Assertive Communication – Body Language – Behavior – Benefits of being Assertive

Team Roles
Importance of teams in Organizations – Your style – three different types Cerebral, Action, People – 8 roles Coordinator, Finisher, Innovator, Shaper, Team Worker, Resource Investigator, Organizer, Evaluator - the role of shaper.

Presentation Skills
Importance of Presentation Skills –Knowledge of the Audience - Body Language - the impact of Voice – overcoming stage fear / Nervousness - Stage Etiquettes - Importance of Content – Introduction, Body, Conclusion –Creating an Impact.

Creativity
Importance of creativity – What is creativity – out of the Box thinking - Lateral Thinking – Critical thinking –Blocks in creativity - Being Creative – Tossing Ideas.

Problem Solving and Decision Making
Problem Solving as skill - Out of the Box thinking – Thinking Styles – Steps in Problem Solving - Steps in Decision Making – Types of Decisions.

References:

1. Dr. Stephen R. Covey, Simon and Schuster (1992), *The 7 Habits of Highly Effective People*, Pocket Books Publishers, London.
2. Marc Mancini, (2005), *Time Management*, TMH Publishers, New Delhi.
3. Infosys Campus Connect Portal – http://campusconnect.infosys.com
4. Stephen R. Covey, A.Roger Merrill and Rebecca R. Merrill (2002), *First Things First*, Pocket Books Publishers, London.
5. Norman Vincent Peale (1990), *The Power of Positive Living*, *Ballantine Books*, New York.
6. Napoleon Hill and W. Clement Stone (1987), *Success Through a Positive Mental Attitude*, Pocket Books Publishers, New York.
7. Stuart R. Levine, CEO & Michael. CROM (1993), *The Leader in You, Dale Carnegie & Associates Inc.* Pocket Books, New York.
8. Shiv Khera (2006), You Can Win, MacMillan India Publishers, New Delhi.

Course Outcomes:

- Students will develop communication, public speaking and soft skills and apply them in their day to day communication.
- Students will find solutions at individual and group level in all areas of academic life.
- Students can take part effectively in various selection procedures adopted by the recruiters

BASIC ELECTRONICS LAB (BE (P))
(Common for II B.Tech I Semester CSE & IT)

Scheme: 2010 **Internal Assessment: 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To introduce the basic design concepts and conduct experiments on CRO, CDS, FG, half and full wave, transistor characteristics, shift registers, Summing and difference amplifiers.

List of experiments:

1. Study of Electronic equipment - CRO, CDS, and FG etc
2. Semiconductor Diode Characteristics (p-n diode and Zener diode)
3. Half Wave and Full wave Rectifiers
4. Transistor Characteristics – CE Configuration
5. Transistor Characteristics – CB Configuration.
6. Verification of Logic Gates
7. Half Adder and Full Adder
8. Multiplexers and Decoders
9. Verification of Flip flops
10. Shift Register
11. Inverting and Non Inverting Amplifier
12. Summing and Difference Amplifier

Course Outcomes:

- Students are able to learn semiconductor diode characteristics, transistor characteristics, shift registers, logic gates, half and full adders.
- Students will evaluate logic gates, summing and difference amplifiers.

OBJECT ORIENTED PROGRAMMING LAB (OOP (P))
(Common for II B.Tech I Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To expose students to use C++ as object oriented programming language as opposed to procedural programming language and apply it to solve engineering applications.

List of Experiments:

1. Simple programs without using Classes.
2. Programs using Classes.
3. Programs using Constructor and Destructor.
4. Programs that Illustrate Operator Overloading.
5. Programs that Illustrate Function Overloading
6. Programs that use the concept of Friend Functions.
7. Programs that Implement Inheritance
8. Programs that use Files concept
9. Programs that use the concept of Manipulators
10. Programs that use the Concept of Templates

Course Outcomes:

- Students will be able to develop software applications using object oriented language C++.

PROGRAMMING METHODOLOGY & DATA STRUCTURES LAB (PMDS(P))
(For II B.Tech I Semester IT)

Scheme: 2010 **Internal Assessment: 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students learn the implementation of insertion, deletion and display operations on various linear and linear data structures.

List of experiments:

1. Searching
   (a) Linear Search.
   (b) Binary Search.

2. Bubble Sort and Merging of two Sorted Arrays.

3. Linked lists
   (a) Operations On Single Linked Lists.
   (b) Operations On Double Linked Lists.

4. Stacks
   (a) General Stack.
   (b) Stack Using Linked Lists.

5. Applications Of Stacks
   (a) Infix to Postfix conversion.
   (b) Evaluation of Postfix Expression.

6. Queues
   (a) Queues Using Arrays.
   (b) Queues Using Linked Lists.

7. Trees
   Operations on Binary Trees
   (a) Insertion.
   (b) Deletion.
   (c) Traversing.

8. Quick Sort.

9. Shell Sort.

10. Heap Sort.

Course Outcomes:

- Students will be able to identify, implement and apply the suitable data structure for a given real world problem

FOUR YEAR B.TECH. DEGREE COURSE

Scheme of Instruction and Examination

(Effective from 2010-2011)

II B.Tech. (IT) - II Semester **Scheme: 2010**

S. No	Subject	Abbreviation	Credits	Scheme of Instruction periods/week			Duration of End Exam (Hours)	Scheme of Examination		
								Maximum Marks		
				L	D/T	P		End Exam	Internal Assessment	Total
I	**Theory**									
1	Operating Systems	OS	**5**	**4**	**1**	**–**	3	70	30	100
2	Computer Graphics	CG	**5**	**4**	**1**	**–**	3	70	30	100
3	File Structures and Data Processing	FSDP	**5**	**4**	**1**	**–**	3	70	30	100
4	Java Programming	JP	**5**	**4**	**1**	**–**	3	70	30	100
5	Principles of Programming Languages	PPL	**4**	**4**	**–**	**–**	3	70	30	100
6	Principles of Data Communication	PODC	**5**	**4**	**1**	**–**	3	70	30	100
7	Aptitude and Reasoning Skills	ARS	**2**	**1**	**2**	**–**	**–**	**–**	100	100
II	**Practical**									
8	Computer Graphics & Data Processing Lab	CGDP(P)	**2**	**–**	**–**	**3**	3	70	30	100
9	Java Programming Lab	JP(P)	**2**	**–**	**–**	**3**	3	70	30	100
	Total		**35**	**25**	**7**	**6**		**560**	**340**	**900**

OPERATING SYSTEMS (OS)
(Common for II B.Tech II Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To enable the students learn basic operating system concepts with emphasis on foundations and design principles.
- To make the students understand the principles of concurrency, synchronization and resource management techniques.
- To facilitate the students learn issues of performance and fairness objectives, avoiding deadlocks as well as security and protection.

Unit-1
Introduction: What is Operating Systems, Concepts - process, Files, System calls, Shell, Operating System Structure – Monolithic, Layered Systems, Virtual Machines, and Client-Server Model.

Unit-2
Process Management: - Introduction to process, Threads, Process scheduling. Inter Process Communication concepts – Race condition, Mutual Exclusion, Semaphore, Producer/Consumer Classical IPC problems.

Unit-3
Memory Management: Storage hierarchy, Real memory management systems – Mono programming system, Multiprogramming system- Fixed partition, Variable partition, paging segmentation and combined system.

Unit-4
Virtual Memory: Overlays, Demand Paging, Page Replacement Algorithms, Allocation of Frames - Thrashing.

Unit-5
Secondary Storage Management – Physical characteristics, Disk scheduling.
File Systems: File Concepts, Access Methods, Directory Systems , Allocation Methods, Free space management, File Protection.

Unit-6
Deadlocks: Introduction, Resource Allocation graph, Deadlock Characterization, Deadlock Prevention, Deadlock Avoidance –Bankers Algorithm, Deadlock Detection and Deadlock Recovery.

Unit-7
Protection: Goals of Protection, Mechanisms and Policies, Domain of Protection, Access Matrix, Implementation of Access Matrix, Dynamic Protection Structures, Revocation, Existing Systems, Languages-Based Protection, Protection Problems, Security.

Unit-8

The Unix Operating System: History, Design Principles, Programmer Interface, User Interface, File System, Process Management, Memory Management, I/O System, Inter process Communication.

Text books:

1. TANNUNBAUM [2000], *MODERN OPERATING SYSTEM*, Pearson Education.
2. Silberschatz and Galvin[2008], *Operating System Concepts*.

Reference books:

1. Gagne [6th Edition, 2003], *Operating System Concepts*, John Wiley & Sons, Inc publishers.(Chapters 1- 14, 18, 19).

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will be able to learn the fundamental operating system abstractions.
- Students will also learn the concepts of process management, memory management, deadlock avoidance and protection mechanisms.

COMPUTER GRAPHICS (CG)

(Common for II B.Tech II Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration:3hrs**

Course Objectives:

- To enable the students understand the applications of computer graphics, various line, circle, character, polygon generation and filling algorithms
- To provide the students with an understanding of 2D and 3D object transformations, windowing and clipping concepts, color models.
- To introduce the concepts of animation and morphing.

Unit- 1

Introduction: Applications of computer graphics, points, lines, pixels and frame buffer, primitive operations, frame buffer, screen grid coordinates, normalized device coordinates, line drawing algorithms- DDA, Bresenham's line, Bresenham's circle, Mid-point circle algorithms, character generation, aliasing, line, text attributes.

Unit- 2

Display Devices: CRTs, Raster scan systems, Random scan systems, Refresh CRT, Color CRT monitor, DVST (Direct View Storage Tube), Flat panel displays. Graphics Input devices: Joy stick, light pen, tablet and digitizer.

Unit- 3

Polygon Generation and Filling algorithms: Types of polygons, representation of polygons, Entering polygons, Inside-Outside test (odd-even, winding method), scan-line polygon fill, boundary fill, flood fill algorithm.

Segments: Segmentation and segment tables, Operations on Display file segments, Image transformation.

Unit- 4

2D Transformations: Types of transformations: coordinate transformation, geometric transformation, basic transformations: Translation, scaling, rotation, homogeneous coordinates, compound transformation: reflection, shearing, transformation about arbitrary points & lines.

Unit- 5

Windowing and Clipping: Window, viewport, viewing transformations, clipping, Cohen-Sutherland line clipping, Sutherland-Hodgeman polygon clipping algorithm.

Unit- 6

3D Graphics: 3D transformations, 3D object representations. Projection: parallel, isometric, perspective viewing, 3D viewing transformation, hidden surface & lines, back face detection & removal, Z-buffer, painter's algorithm.

Unit- 7

Curves: Introduction, curve generation, interpolation, B-spline, B-splines & corners, Biezer curve Algorithm.

Unit- 8

Color model: RGB, YIQ, CMY, HSV, HLS, introduction to animation, morphing.

Text books:

1. Donald Hearn and M. Pauline Baker [2007], *Computer Graphics C Version II edition*, Eastern Economy Edition.
2. Steven Harrington [2006], *Computer Graphics, A programming approach*, MGH.

References books:

1. David F. Rogers [2008], [II Edition], *Procedural elements of Computer Graphics*, Tata McGraw Hill Co.
2. XiangZhigang and Plastock Roy A [2003], [Schaum's outline of Theory and problems of Computer Graphics, [II Edition], *Computer Graphics*.
3. W. M. Newman & R. F. Sproull [1997], [II Edition], *Principles of Interactive Computer Graphics*, Tata McGraw Hill Co.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students are provided with an understanding of algorithms and theories that form the basis of computer graphics and modeling.
- Students are able to implement concepts of clipping, 2D and 3D transformations, color models, animation and morphing.

FILE STRUCTURES AND DATA PROCESSING (FSDP)
(Common for II B.Tech II Semester CSE and IT)

Scheme: 2010 **Internal Assessment: 30**
Contact Periods: (4L+1T)/week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To introduce techniques for organization and manipulation of data in secondary storage including the low level aspects of file manipulation.
- To understand COBOL structural organization, conditional statements, table handling, subroutines and report generation

Unit-1
Data Processing Concepts: Introduction, Data Processing Functions, Data Recording, Input/Output and Storage Devices, The Central Processing Unit (CPU), Computer Generations.
File Concepts and Program Logic: File Concepts, Record Layout.

Unit-2
Program Logic –Algorithm, Flow Chart Symbols, Sample Flow Charts. Direct Access Files: Direct Access Storage, Characteristics of Magnetic Disk Storage, Recording Data on Disk, Data Record Formats, File Organization Methods.

Unit-3
Structural Organization of COBOL: Character Set, Words, Sentences, Identification Division, Environment Division, Data division, Data types, Numeric, Alphabetic & Alphanumeric, Input-output sections working storage section.

Unit-4
PROCEDURE division Features: ACCEPT, DISPLAY, MOVE, Arithmetic & COMPUTE verbs, sample programs, PERFORM & GOTO verbs, STRING, UNSTRING, INSPECT & COPY verbs, sample programs using PERFORM, Miscellaneous COBOL statements.

Unit-5
Conditional statements & Table handling: relation conditions, Nested Conditions, Class conditions, Condition-name Conditions, Structured Programming forms of program structure, structural flowcharts, Subscripting, occurs clause, Multidimensional tables, Table handling with PERFORM verb, SET verb, SEARCH verb .

Unit-6
Cobol Subroutines: Structure of a COBOL Subroutine, the Calling of a Subroutine, State of a Subroutine and CANCEL statement. Sequential files, Relative files, indexed sequential files, COBOL instructions for sequential files, Relative file organisation and indexed sequential files.

Unit-7
Sorting Searching & Merging: Linear search sorts, Merge sort, Linear search, Binary search, File sorting &merging using sequential files.

Unit-8

Report Generation: Output layout design, Heading, Date & Detailed summaries Control breaks, Language specifications for COBOL report writing.

Text books:

1. M.K.ROY, D.Ghosh Dastidar [2008], *COBOL Programming including MS COBOL and COBOL 85*, TMH.
2. S.Philippakis Andreass [1978], *Information System through COBOL*, MGH.

Reference books:

1. Nancy Stern and Robert A. Stern [2007], *Structured COBOL Programming*, Wiley India.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will be able to explain the importance of file structures in the Data Storage and Manipulation.
- Students will be able to implement the learned techniques and concepts using COBOL for solving various file management problems.

JAVA PROGRAMMING (JP)
(Common for II B.Tech II Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To give the students a firm foundation on Java concepts like Primitive data types, Java control flow, Methods, Object-oriented programming, Core Java classes, packages and interfaces, multithreading.
- To provide the students with the concepts of Java applets, Abstract Window Toolkit and exception handling.

Unit - 1

Introduction: Over view of java, Data types, Variables and arrays, operators, Control statements, Classes and objects.

Unit - 2

Inheritance - Basic concepts, using super, method overriding, Dynamic method dispatch, Abstract class, using final, The object class.

Unit - 3

String Handling: String Constructors, Special String Operations-String Literals, String Concatenation, Character Extraction, String Comparisons. Searching Strings, Modifying a string.
String Buffer : StringBuffer Constructors, length(), capacity(), setLenght(),Character Extraction methods, append(),insert(),reverse(),delete(),replace()(,substring().

Unit - 4

Packages and Interfaces - Packages, Access protection, Importing packages, Interfaces.

Exception Handling - Fundamentals, Types of Exception, Usage of try, catch, throw, throws and finally keywords, Built in Exceptions.

Unit - 5

Multithreading - Concepts of multithreading, Main thread, creating thread and multiple threads, Using isAlive( ) and join( ), Thread Priorities, synchronization, Interthread communication.

Unit -6

I/O and Applets - I/O Basics, Reading Console input, writing Console output, Reading and Writing Files, Applet basics and Applet class.

Unit - 7

Event Handling - Basic concepts, Event classes, Sources of events, Event listener Interfaces, Handling mouse and keyboard events, Adapter classes.

Unit-8

Abstract Window Toolkit (AWT) - AWT classes, Concepts of component, container, panel, window, Frame, Canvas, Font, Color, and Graphics.

AWT Controls - Control basics, Labels, Buttons, Check boxes, check box group, choice, Lists, Scroll Bars, Text field, Text Area, Layout Managers and Menus.

Text books:

1) Bruce Eckel [2008], [2nd Edition], *Thinking in Java*, Pearson Education.
2) Herbert Schildt [2008], [5th Edition], *The Complete Reference Java2*, TATA McGraw-Hill.

Reference Books:

1) H.M Dietel and P.J Dietel [2008], [6th Edition], *Java How to Program*, Pearson Education.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will be able to use the Java SDK environment to create, debug and run Java applications
- Students can design and develop projects using java programming.

PRINCIPLES OF PROGRAMMING LANGUAGES (PPL)
(Common for II B.Tech II Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To provide an exposure to core concepts and principles of existing programming languages.
- To enable the students understand the tradeoff between language design and implementation.
- To explore various important programming methodologies like functional, logic and object oriented programming languages.

Unit-1
Introduction: The Study of Programming Languages - A Short History of Programming Languages, What makes a Good Language? **Effects of Environments on Languages**- Batch Processing Environments, Interactive Environments, Embedded System and Environments, Programming Environments.

Unit-2
Language Design Issues: The structure and operation of a Computer - The Hardware of the computer, Firmware Computers, Translators and Software Simulated Computers. Virtual Computers and Binding Times - Syntax and Semantics, Virtual Computers and Language Implementations, Hierarchy of Computers, Binding and Binding Time.

Unit-3
Data Types: Properties of Types and Objects- Data Objects, Variables, Constants, Data Types, Specification and Implementation of Elementary Data Types, Declarations, Type Checking and Type Conversion, Assignment and Initialization. Elementary Data Types - Numeric Data Types, Enumeration's, Boolean, Characters.

Unit-4
Structured Data Types - Structured Data Objects and Data Types, Specification of Data Structure Types, Implementation of Data Structure types, Declaration and Type Checking for Data Structures, Vectors and Arrays, Records, Lists, Character Strings, Pointers and Programmer-Constructed Data Objects, Sets, Executable Data Objects, Files and Input-Output.

Unit-5
Abstraction & Inheritance: Abstract Data Type - Evaluation of Data Type Concept, Information Hiding. **Encapsulation by Subprograms** - Subprograms as Abstract Operations, Subprogram Definition and Invocation, Subprogram Definition as a Data Object. Inheritance - Derived Classes, Methods, Abstract Classes, Objects and Messages, Polymorphism. **Type Definitions** - Type Equivalence, Type Definitions with Parameters.

Unit-6

Storage Management - Major Run Time Elements Requiring Storage, Static Storage Management, Stack Based Storage Management, Heap Storage Management (Fixed-Size Elements and Variable-Size Elements). Sequence Control - Implicit and Explicit Sequence Control, Sequencing with Arithmetic Expressions - Tree-Structured Representation, Execution-Time Representation.

Unit-7

Sequence Control between Statements - Basic statements, Structured Sequence Control. Subprogram Sequence Control- Simple Call-Return Subprograms, Recursive Subprograms. Attributes of Data Control - Names and Referencing Environments, Static and Dynamic Scope, Block Structure, Local Data and Local Referencing Environments.

Unit-8

Parameters and Parameter Transmission mechanisms. Variations on Subprogram Control - Exceptions and Exception Handlers, Co-Routines. **Concurrency:** Basic concepts, semaphores, monitors, message passing **Functional Languages**: LISP **Object-Based Languages**: Basics of Small Talk. **Logic Programming Languages:** Basics of Prolog.

Text Books:

1. Terrence W.Pratt [2008], *Programming Language Design and Implementation,* PE.
2. E.Horowitz [2004], *Fundamentals of Programming Languages,* Galgotia Publicsations.

Reference books:

1. Robert W. Sebesta [1992], [8th Edition], *Concepts of Programming Languages*, Pearson Ed.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will be able to understand the existing programming paradigms and their classification.
- Students will program in functional, logic and object oriented programming languages.

PRINCIPLES OF DATA COMMUNICATION (PODC)
(For II B.Tech II Semester IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To understand the fundamental principles of communication networks with a focus on physical layer and data link layers of the network protocol stack.
- To provide a detailed examination of digital and analog transmission, multiplexing, switching, multiple access methodologies.
- To learn various concepts in LAN technologies.

Unit 1:

Introduction: Communications network, Protocol, Approaches to network design – Network functions and network topology, The OSI reference model – unified view of layers, protocols and services, Seven Layer model, Overview of TCP/IP architecture.

Unit 2:
Digital Transmission Fundamentals: Need for digital communications, Basic properties of digital transmission systems, Analog and digital – Analog and digital data, Analog and digital signals, Digital signals – Bit rate, Bit length, Transmission of digital signals.

Unit 3:
Properties of Media and Digital Transmission Systems: Twisted Pair, Coaxial Cable, optical fiber, Radio transmission, infrared light, applications. Transmission impairments – Attenuation, Distortion and Noise, Performance – Bandwidth, Throughput, Latency, Jitter.

Unit 4:
Signal Encoding Techniques: Digital-to-digital conversion – Line coding schemes, block coding and scrambling, Analog- to-digital conversion – Pulse Code Modulation, Delta Modulation, Transmission modes –Parallel, serial transmissions. Analog-to-analog conversion – Amplitude modulation, Frequency modulation, phase modulation. Multiplexing - Multiplexing – Frequency-division multiplexing, Time-division multiplexing, Wavelength-division multiplexing.

Unit 5:
Switching: Circuit-switches – Space-division switches, multistage switches, time-division switches, hybrid switches, time-space-time switches, Datagram networks, Virtual circuit networks.

Unit 6:
Data link Layer: Error detection – Introduction, Block coding – error detection, error correction, hamming distance and minimum hamming distance, Cyclic codes, Checksum. Framing, Flow and error control, protocols, HDLC, PPP.

Unit 7:
Multiple Access: Random Access – Aloha, CSMA, CSMA/CD, CSMA/CA, FDMA, TDMA, CDMA

Unit 8:
Local Area Networks: IEEE standards, Standard Ethernet, Fast Ethernet, Gigabit Ethernet. IEEE 802.11 – Architecture, MAC sub layer, Addressing mechanism.

TEXT BOOKS:

1. Behrouz A. Forouzan – "Data communications and Networking", MGH, 4th edition
2. Andrew S.Tenenbaum [2007], Computer Networks, Pearson Education, 4th Edition.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will be able to express the fundamental functionality of physical and data link layers.
- Students will be able to understand the fundamentals of digital and analog transmission, multiplexing, switching and perform error detection and correction techniques.
- Students will understand the architectures LAN.

APTITUDE AND REASONING SKILLS (ARS)
(Common for II B.Tech. II Semester All Branches)

Scheme: 2010 **Internal Assessment: 100**
Contact Periods: (1L+2T)/week
Credits: 2

Course Objectives:

- To be able to solve problems on number systems, simple and Compound Interest, Mensuration, sets, functions, Coordinate Geometry, Area, Volume and surface areas, Stocks, shares, Bankers discounts.
- To interpret data using bar graphs, pie charts, line graphs.
- To solve various puzzles and brain teasers with reasoning and logic.

Quantitative Aptitude

- Number Systems, Averages, Problems on ages, Allegations, Percentages, Profit and Loss, Simple interest and Compound Interest, Ratio and Proportions and Variation, Time and Work, Time and Distance, Mensuration, Functions, Set Theory, Permutation and Combinations, Probability, Progressions, Inequalities, Coordinate Geometry, quadratic Equations, Logarithms

- HCF and LCM, Decimal Fractions, Simplification, Square Roots and Cube Roots, Surds and Indices, Pipes and Systems, Area, Volume and Surface Areas, Races and Games, Calendar, Clocks, Stocks and Shares, True Discount, Banker's Discounts

- Data Interpretation – Tabulation – Bar Graphs – Pie Charts – Line Graphs.

Reasoning

Directions, Blood Relations, Problems on cubes, Series and sequences, odd man out, Coding and decoding, Data Sufficiency, logical deductions, Arrangements and Combinations, Groups and Teams, General Mental Ability, Puzzles to puzzle you, More Puzzles, Brain Teasers, Puzzles and Teasers.

References:

1. Arun Sharma (2003), *How to Prepare for Quantitative Aptitude*, TMH Publishers, New Delhi.
2. R.S. Aggarwal (2005), *Quantitative Aptitude,* S.Chand Publishers, New Delhi.
3. Sharon Weiner-Green, Ira K.Wolf (2006), *Barron's GRE,* Galgotia Publications, New Delhi.
4. R.S Aggarwal (1998), *Verbal and Non-Verbal Reasoning,* S.Chand Publishers, New Delhi.
5. Shakuntala Devi (2005), *Puzzles to Puzzle You,* Orient Paper Backs Publishers, New Delhi.
6. Shakuntala Devi (2006), *More Puzzles,* Orient Paper Backs Publishers, New Delhi.
7. Ravi Narula (2005), *Brain Teasers,* Jaico Publishing House, New Delhi.
8. George J Summers (2005), *Puzzles and Teasers,* Jaico Publishing House, Mumbai.

Course Outcomes:

- Students will be able to solve quantitative aptitude problems on number systems, Coordinate Geometry, Stocks, shares, Bankers discounts, etc.
- Students will interpret data using bar graphs, pie charts, line graphs.
- Students will apply reasoning and logic to solve various puzzles and brain teasers.

COMPUTER GRAPHICS & DATA PROCESSING LAB (CGDP(P))
(Common for II B.Tech II Semester CSE and IT)

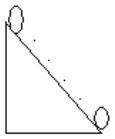
Scheme: 2010 **Internal Assessment : 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To understand and implement line and circle drawing algorithms, clipping algorithms.
- To perform 2D and 3D object transformations and understand the concept of animation.
- To be able to implement sequential, relative, indexed sequential files in COBOL.

List of Experiments:

1. Implementation of line drawing algorithms.
2. Implementation of circle drawing algorithms.
3. Generation of characters
4. Implementation of polygon filling algorithms
5. Implementation of 2D Transformations
6. Implementation of 3D Transformations
7. Implementation of line and polygon Clipping
8. Implementation of rolling a ball on the hypotenuse of a right-angled triangle.



(Animation)

9. Implementation of arithmetic & perform verbs in Cobol.
10. Implementation of sequential file, relative file and indexed sequential file in Cobol.

Course Outcomes:

- Students will be able to draw lines, circles and fill polygons using standard algorithms.
- Students can clip the objects present outside the window and also perform 2D and 3D objects transformations, simple animations.
- Students will implement different file concepts in COBOL.

JAVA PROGRAMMING LAB (JP(P))
(Common for II B.Tech II Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To be able to understand and implement Java applications and applets, Primitive data types, Java control flow, Methods, classes, packages, multithreading and exception handling.

List of experiments:

1. Implementing classes and objects.
2. Constructors.
3. Inheritance.
4. Packages.
5. Interfaces.
6. Exception Handling.
7. Multithreading.
8. Event Handling.
9. AWT and AWT Controls.
10. Applets.

Course Outcomes:

- Students will be able to implement software projects in Java.

FOUR YEAR B.TECH. DEGREE COURSE

Scheme of Instruction and Examination

(Effective from 2010-2011)

III B.Tech (IT) – I Semester **Scheme: 2010**

S. No	Subject	Abbreviation	Credits	Scheme of Instruction periods/week			Duration of End Exam (Hours)	Scheme of Examination		
								Maximum Marks		
				L	D/T	P		End Exam	Internal Assessment	Total
I	**Theory**									
1.	Computer Networks	CN	**5**	**4**	**1**	**-**	3	70	30	100
2.	Unix & Shell Programming	USP	**5**	**4**	**1**	**-**	3	70	30	100
3.	Theory of Computation	TC	**5**	**4**	**1**	**-**	3	70	30	100
4.	Database Management Systems	DBMS	**5**	**4**	**1**	**-**	3	70	30	100
5	Design and Analysis of Algorithms	DAA	**5**	**4**	**1**	**-**	3	70	30	100
6.	Web Technologies	WT	**5**	**4**	**1**	**-**	3	70	30	100
II	**Practical**									
7.	Database & Web Technologies Lab	DWT(P)	**2**	**-**	**-**	3	3	70	30	100
8.	OS & Algorithms Lab	OSA (P)	**2**	**-**	**-**	3	3	70	30	100
	Total		**34**	**24**	**6**	**6**		**560**	**240**	**800**

COMPUTER NETWORKS (CN)
(Common for III B.Tech I Semester CSE and IT)

Scheme: 2010 **Internal Assessment: 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students understand the basic concepts of data communications and computer networks,
- To be able to learn different layers in OSI reference model.
- To understand principles of the TCP/IP protocol suite, LANs, Wireless LANs and WANs.

Unit - 1
Review of ISO OSI Reference Models, TCP/IP Reference Model.
Network layer: Design Issues, services, internal organization, comparison of virtual circuits and datagram subnets. Routing Algorithms: The optimality principle, shortest path routing, Flooding, Distance vector, Link state, Hierarchical, Broadcast and Multicast Routings.

Unit-2
Congestion control algorithms: principles, congestion prevention policies, traffic shaping, flow specification, congestion control in virtual circuits, choke packets, load shedding, jitter control.

Unit - 3
Internetworking: How Networks differ, concatenated virtual circuits, connectionless internetworking, tunneling, Internet work routing, Fragmentation.

Unit-4
The Network layer of the Internet: The IP protocol, IP address, subnets, Internet Control protocols, Gateway routing protocols: OSPF, BGP, Mobile IP, IPv6.

Unit - 5
Transport Layer: Service/Quality of service, service primitives, Addressing, Establishing a connection, releasing a connection, flow control, buffering, Multiplexing and crash recovery.

Unit-6
Internet Transport Protocols: TCP- service model, protocol, segment header, connection management Transmission policy, congestion control and timer management and UDP.

Unit - 7
Application Layer: DNS: The DNS Name Space, Resource Records, Name Servers. Electronic Mail: Architecture and Services, The User Agent, Message Format, Message Transfer.

Unit - 8
Network Security: Cryptography, symmetric key, public key Algorithms, Digital signatures, Authentication Protocols, Email Security, Web Security.

Text books:
1. BA Forouzan [2008], [4th Edition], *Data Communications and Networking*, TMH.
2. Andrew S.Tenenbaum [2007], [4th Edition], *Computer Networks*, Pearson Education.

Reference books:
1. S.Keshar [2007], [II Edition], *An Engineering Approach to Computer Networks*, Pearson Ed.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will learn major functions of each layer of the OSI and TCP/IP Protocol suites and understand congestion control algorithms, Internetworking, QoS, TCP and UDP, network security.

UNIX & SHELL PROGRAMMING (USP)
(Common for III B.Tech I Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To learn features of Unix, Command shell, Shell programming, basic system administration and understand Process and Signals, system security and IPC.

Unit – 1
Basics of UNIX-I: Introduction to UNIX operating system, UNIX history, features, and architecture, Unix File System, Unix Session, Working with files and directories

Unit - 2
Basics of UNIX-II: using the VI editor, Command Shell and X window system.

Unit – 3
Shell Programming-I: What is Shell, Types of Shells, Shell Script, Shell Variables, Shell Keywords, System Variables and User-defined Variables

Unit - 4
Shell Programming-II: Command line Arguments, Arithmetic in Shell Script, Decision making statements and the loop control structure.

Unit – 5
Basic System Administration: Setup Procedures, Maintenance Tasks, Security for System Administrators.

Unit – 6
Processes and Signals: Processes, ps command, kill command, parent and child processes, Process Scheduling, Process Priorities and Signals.

Unit - 7
System Security: User and group IDs, Access Control Lists, Password Files, File Encryption and Pretty Good Privacy.

Unit – 8
Inter-Process Communication: Pipes, FIFOs, Semaphores, Message Queues and Shared Memory.

Text Book:
1. Kenneth H.Rosen and Douglas A. Host [2008], [second edition], *UNIX-The Complete Reference*, TMH.
2. Yashavant Kanetkar [2008], [First Edition], *UNIX Shell Programming*, BPB Publication.
3. W.R.Stevens [2004], *Advanced Programming in the UNIX Environment*, Pearson Education.

References:
1. Brain W. Kernighan and Rob Pike [2008], *The UNIX Programming Environment, Prentice-Hall India*.
2 Sumitabha Das [2008], [Fourth Edition,],. *UNIX Concepts and Applications,* Tata-McGraw Hill Publication.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:
- Students will get knowledge of UNIX environment and are able to understand Unix-file system, session, basic system administration, process scheduling.

THEORY OF COMPUTATION (TC)
(Common for III B.Tech I Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To be able to construct finite state machines and the equivalent regular expressions and prove the equivalence of languages described by finite state machines and regular expressions.
- To be able to construct pushdown automata and the equivalent context free grammars, Turing machines and Post machines.

Unit - 1
Finite Automata preliminaries: Strings, Alphabet, Language Operations, Finite State Machine definitions, Finite Automation Model, Acceptance of strings and languages, Non-deterministic Finite Automation, Equivalence between NFA and DFA, conversion of NFA into DFA, Equivalence between two FSM's, Minimization of FSM, , Moore and Mealy machines, Applications of FA's.

Unit - 2
Regular Expressions and Regular Sets: Regular sets, Regular expressions, Identity rules, Manipulation of regular expression, Equivalence between RE and FA, Inter conversion, Pumping lemma, Closure properties of regular sets.

Unit - 3

Grammar Formalism : Regular grammar-Right linear grammar and left linear grammar, Equivalence between regular linear grammar and FA, Inter conversion between RE and RG , Derivation trees, Right most and left most derivation of strings.

Unit-4

Context Free Grammar: Context Free Grammar ,Ambiguity in CFG, minimization of CFG, Chomsky Normal Form, Griebach Normal Form, pumping lemma of CFL.

Unit - 5

Push Down Automata: Definition, model acceptance of CFL, Equivalence of CFG and PDA, and interconversion, Properties of CFL.

Unit-6

Turing Machines: Turing machine definition, model, design of TM, Computable functions, Recursively enumerable language, Church's hypothesis, Universal Turing machine.

Unit - 7

Computability Theory: Model of Linear Bounded Automation, TM and type0 grammers, LBA and Languages, Halting problem of TM.

Unit-8

LR(k)grammars: properties of LR(k)grammars, LR(k) grammar. primitive recursive functions, partial recursive functions and TMs.

Course Outcomes:

- Students will be able to formalize mathematical models of computations, use these formalisms to explore the inherent limitations of computations and describe some major current approaches to investigate feasible computation.

Text books:

1. Hopcroft H.E. and Ullman J.D [2007], [Second Edition], *Introduction to Automata Theory Languages and Computation*, Pearson Education.
2. Mishra and Chandrashakaran [2007], *Theory of computer sciences: Automata languages and computation*. Pearson Education.

Reference books:

1. K V N Sunitha and N Kalyani, Formal languages and automata theory,TMH.
2.John C Martin [2008], *Introduction to languages and the theory of computation*, TMH.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will be able to formalize mathematical models of computations,use these formalisms to explore the inherent limitations of computations and describe some major current approaches to investigate feasible computation.

DATABASE MANAGEMENT SYSTEMS (DBMS)
(Common for III B.Tech I Semester CSE and IT)

Scheme: 2010 **Internal Assessment: 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students confident in maintaining huge amounts of data by creating tables and accessing them.
- To apply concurrency control and recovery techniques during transaction execution.

Unit – 1

Introduction: Purpose of Database Systems, View of Data, Database System Applications, Database Language, Relational Databases, Database Design, object Based and Semi Structured Databases, Data Storage and Querying Transaction Management, Database Architecture, Database user and Administrator.
Entity-Relationship Model: Basic Concepts, Design Issues, Mapping Constraints, Keys, Entity-Relationship Diagrams, Weak Entity Sets, Extended E-R Features, Design of an E-R Database Schema, Reduction of an E-R Schema to Tables.

Unit – 2

Relational Model: Structure, Fundamental Relational Algebra Operations, Additional Relational Algebra Operations, Extended Relational Algebraic Operations, Null Values, Modification of Database, Views.

Unit-3

SQL: Form of Basic SQL Query, Examples of Basic SQL Queries, Introduction to Nested Queries, Correlated Nested Queries Set, Comparison Operators, Aggregate Operators, Null Values, Comparison, Control Structures, Procedures, functions, Triggers and Cursors in PL/SQL. Using Null values, Logical Connectivity's – AND, OR, and NOT, Impact on SQL Constructs. Outer Joins, Disallowing Null Values.

Unit – 4

Relational Database Design: Features of Good Relational Designs, Atomic Domains and First Normal Form, Decomposition using Functional Dependencies, Decomposition using Multivalued Dependencies, Join Dependencies, Domain-Key Normalization Form, Alternative approaches.

Unit – 5

Indexing and Hashing: Basic Concepts, Ordered Indices, B Plus Tree Index Files, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing.

Unit-6

Transactions: Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for Serializability.

Unit – 7

Concurrency control: Lock-Based Protocols, Timestamp-Based Protocols, Validation Based Protocols, Multiple Granularity, Multiversion Schemes, Deadlock handling, Insert and Delete Operations.

Unit-8

Recovery System: Failure Classification, Storage Structure, Recovery and Atomicity, Log-Based Recovery, Recovery with Concurrent Transactions, Buffer Management, Failure with Loss of Non-Volatile Storage, Advanced Recovery Techniques.

Text books:

1. Henry F. Korth & Abraham Silberschatz [1997], *Data Base System Concepts*, MC Graw Hill Fifth Edition.
2. Elmarsi Ramez and Navrate Shamkant B [2009], *Fundamentals of Data Base Systems*, Pearson Education.

Reference books:

1. C J Date [2008], *An Introduction to Data Base Systems*, Pearson Education.
2. Raghu RamaKrishnan and Johnannes Gehrke [2003], [3rd Edition], *Data Base Management Systems*, TATA Mc GrawHill.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

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Course Outcomes:

- Students can get the capability of maintenance of huge amounts of data along with reducing of redundancy in data.
- Students also understand transaction management, concurrency control and learn recovery techniques.

DESIGN AND ANALYSIS OF ALGORITHMS (DAA)
(Common for III B.Tech I Semester CSE and IT)

Scheme: 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To study paradigms and approaches used to analyze and design algorithms and to appreciate the impact of algorithm design in practice.
- To understand how a number of algorithms for fundamental problems in computer science and engineering work and compare with one another, and to make the students design efficient algorithms.

Unit-1

Introduction:-What is an Algorithm? Performance Analysis, Asymptotic notation.
Elementary Data Structures:Stacks and Queues, Trees, Dictionaries, Priority Queues, Sets and Disjoint Set union, Graphs.

Unit-2

Divide and Conquer :- General method, Binary search, Finding Maximum and Minimum, Merge sort, Quick sort, Selection sort, Strassen's Matrix Multiplication.

Unit- 3

Greedy Method :- The General Method, Knapsack Problem, Tree Vertex Splitting, Job Sequencing with Deadlines, Minimum-Cost Spanning Tree, Optimal Storage on Tapes, Optimal Merge Patterns, Single Source Shortest Path.

Unit-4
Basic Traversal and Search Techniques: - Techniques for Binary Trees, Techniques for Graphs, Connected Components and Spanning Trees, Biconnected Components and DFS.

Unit-5
Dynamic Programming :- The General Method, Multistage Graphs, All Pairs Shortest Paths, Optimal Binary Search Trees, String Editing, 0/1-Knapsack, Reliability Design, The Travelling Salesperson Problem .

Unit-6
Backtracking :- The General Method, The 8-Queens Problem, Sum of Subsets, Graph Coloring, Hamiltonian cycles, Knapsack problem.

Unit-7
Branch and Bound :- The Method, 15 – Puzzles Problem, Job Sequencing with Penalties, 0/1-Knapsack problem, Travelling Salesperson.

Unit-8
Lower Bound Theory :- Comparison Trees, Oracles and Adversary arguments, Techniques for Algebraic problems.

Text books:
1. Ellis Horowitz, Sartaz Sahni & Sanguthevar Rajasekaran [2008], *Fundamentals of Computer Algorithms*, Galgotia Publications.

Reference books:
1. Jon Kleinberg, Eva Tardos [2006], *Algorithm Design*, Pearson Education.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will be able to prove the correctness and analyze the running time of the algorithms for the classic problems in various domains.
- Students can apply these algorithms and design techniques to solve problems.

WEB TECHNOLOGIES (WT)
(For III B.Tech I Semester IT)

Scheme: 2010 **Internal Assessment: 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To make a graduate learn how to create and view a web page and how to apply various tags and add images, frames to web page.

Unit-1
Essential HTML: Introduction, Creating and viewing a web page, immediate solutions.
Working with Text: Physical and Logical HTML Styles. Immediate Solutions.

Unit-2

Presenting and Arranging Text: Arranging Text, Using and , Using Layers, Pre-formatting Text, Immediate Solutions.

Working with images: Images in Web pages, Graphic formats, Creating images, Immediate Solutions

Unit-3

Links and Lists: Creating hyperlinks, Creating Image maps and Lists. Creating Tables: Creating table, Adding a border, Padding cells, Aligning data vertically and Horizontally, spanning rows and columns, setting colors, immediate solutions.

Unit-4

Working with Frames: Creating vertical and horizontal frames, named frames, immediate solutions.

Essential JavaScript: Introduction, JavaScript Objects, Object Properties and Methods, JavaScript Events, JavaScript Programming.

Unit-5

HTML Forms and HTML Controls: What's a Form? What Controls are available? Creating a Form And adding HTML Controls, Submitting Data from forms, using <FIELDSET>,<LEGEND>,<LABEL>, Immediate solutions.

Unit-6

Dynamic HTML: Dynamic Styles and Dynamic content. Dynamic, Data Binding. Essential XML: valid and well-formed XML documents, XML Document Type Definitions, XML Schemas. Immediate solutions.

Unit – 7

J2EE: Introduction, J2EE Multi-Tier Architecture: Distributive systems, the tier, J2EE multi tier architecture, client tier implementation, web tier implementation.

Unit – 8

J2EE Design Patterns and Frameworks: The pattern concept, pattern catalogue. JDBC Objects: The concept of JDBC, JDBC driver types, JDBC packages, a brief overview of the JDBC Process, Database connection, associating the JDBC/ODBC Bridge with the database.

Text books:

1. Steven Holzner [2008], *HTML Black Book.* DreamTech Press
2. Jim Keogh , *J2EE Complete Reference,* Tata McGraw Hill (Unit-VII,VIII)

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes

- Students are able to create web pages with tables, frames and scripting languages

DATABASE & WEB TECHNOLOGIES LAB (DWT (P))
(For III B.Tech I Semester CSE)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To create database and query it using SQL queries and design forms using forms designer.
- To design a web page using various features.

List of Experiments:

Cycle-1

1. a) Creating tables for various relations
   b) Creating tables with constraints
2. SQL queries
3. SQL * plus reports
4. Insertion of Records Based on Condition
5. PL/SQL program using control Structures
6. procedures
7. Functions
8. Cursors
9. Triggers
10. Creation of controls in a form
11. Forms

Cycle 2:

1. a) Webpage design using Text formatting Tags, images.

   b) Webpage design using Links and Lists.

2. a) Client-side Image maps.

   b) Creating tables with all attributes.

3. Static webpage design of GPREC

4. HTML Forms and Controls

5. Dynamic Styles and Dynamic Content

6. Data binding using Data source Controls (MSHTML, TDC)

Course Outcomes:

- An ability to design a database using SQL and to design a webpage using HTML

OPERATING SYSTEMS & ALGORITHMS LAB (OSA(P))
(For III B.Tech I Semester IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To be able to implement various CPU scheduling algorithms, deadlock avoidance algorithms.
- To also implement various problems using divide and conquer, backtracking techniques.

List of Experiments:

1. First Come First Serve CPU Scheduling.

2. Shortest Job First Preemptive CPU Scheduling.

3. Round Robin CPU Scheduling.

4. First In First Out Page Replace Algorithm.

5. Optimal Page Replace Algorithm.

6. Least Recently Used Page Replace Algorithm.

7. Least Frequently Used Page Replace Algorithm.

8. Bankers Algorithm for Deadlock Avoidance.

Cycle 2:

1. Implementation of MaxMin algorithm using Divide and Conquer
2. Implementation of N-Queens problem using Backtracking
3. Implementation of Greedy knapsack problem
4. Implementation of Prim's algorithm

Course Outcomes:

- Students get a complete knowledge on various CPU scheduling algorithms, deadlock avoidance and are able to learn the implementation of divide and conquer and backtracking techniques.

FOUR YEAR B.TECH. DEGREE COURSE

Scheme of Instruction and Examination

(Effective from 2010-2011)

III B.Tech (IT) – II Semester **Scheme: 2010**

S. No	Subject	Abbreviation	Credits	Scheme of Instruction periods/week			Duration of End Exam (Hours)	Scheme of Examination		
								Maximum Marks		
				L	D/T	P		End Exam	Internal Assessment	Total
I	**Theory**									
1.	Dot Net Technologies	DNT	**5**	**4**	**1**	**-**	3	70	30	100
2.	Microprocessors and Assembly Language Programming	MALP	**5**	**4**	**1**	**-**	3	70	30	100
3.	Network Programming	NP	**4**	**4**	**-**	-	3	70	30	100
4.	Advanced Database Management Systems	ADBMS	**4**	**4**	**-**	**-**	3	70	30	100
5.	Software Engineering	SE	**4**	**4**	**-**	-	3	70	30	100
6.	Compiler Design	CD	**5**	**4**	**1**	**-**	3	70	30	100
7.	Open Elective – I		**2**	**2**	**-**	**-**	-	-	100	100
II	**Practical**									
8.	Dot Net Technologies Lab	DNT (P)	**2**	**-**	**-**	**3**	3	70	30	100
9.	Network Programming Lab	NP(P)	**2**	**-**	**-**	**3**	3	70	30	100
10	ALP & Compilers Lab	ALC(P)	**2**	**-**	**-**	**3**	3	70	30	100
	Total		**35**	**26**	**3**	**9**		**630**	**370**	**1000**

DOT NET TECHNOLOGIES (DNT)
(Common for III B.Tech II Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To understand visual basic 2005 concepts and to build windows applications, web forms and web services.
- To make the students create database and access it using SQL Server.

Unit-1
Visual Basic 2005 Introduction:- Windows Vs Dos Programming – Installing Visual Basic 2005 – Visual Basic 2005 IDE – Creating Simple application. Information and Data – Variables – Comments and white spaces – Data Types – storing Variables – Methods. CONTROLLING THE FLOW: Making Decision – The If. Statement – Select Case – Loops.

Unit-2
Working with Data Structures:- Understanding Arrays – Understanding Enumeration – Understanding Constants – Structures – Working with Collections and Lists – Building Lookup tables with Hash Tables – Advanced Array Manipulation.

Unit- 3
Building Windows Applications: Responding to Events – Building simple Applications – Creating Complex Applications – Using Multiple Forms.
Displaying Dialog Boxes: Message Dialog Box – Open Dialog Control – Save Dialog Control – Font Dialog Control – color Dialog Control - Print Dialog Control.

Unit-4
Creating Menus : Understanding Menu Features – Creating Menus-Context Menus,
Building Objects : Understanding Objects – Building Classes – reusability – Designing Object – Constructions – Inheritance- Objects and Structures – The Frame work Classes.

Unit-5
Advanced Object Oriented Techniques: Building a Favorites viewer – An Alternative Favorite Viewer – Using Shared Prop rites and Methods – Understanding Object Oriented Programming and Memory Management.
Programming Customs Graphics: Building a Simple Paint Program – Dealing with Two Colors – working with Images – More Graphics methods

Unit-6
Accessing Databases: Data Access Components – Data Binding.
Database Programming With SQL Server ADO.NET: ADO.NET – The ADO.NET Classes in action – Data Binding

Unit-7
Web Forms : Thin Client Architecture – Web Forms Vs Window Forms – Web Applications – Active Server pages – Building Web Applications, **Visual Basic 2005 and XML:** Understanding XML – The Address Book Project – Intergrating with address book application.

Unit-8

Web Services and .NET Remoting – What is a web service – Building a web service – The Picture server service – The Picture Server Client- .NET Remoting.

Text books:

1 Beginning Visual Basic 2005 By Thearon Wills, Bryan Newsome – Wrox publisher

Reference books:

1. VB.Net programming By.T.Gaddis (Dreamtech)
2. Microsoft Visual Basic. Net Step by Step by Halvosrson (PHI)
3. OOP with Microsoft Visual Basic.Net by Reynold Hacrtte (PHI)
4. Visual Basic.NET Programming 2005 Edition by Steven Holzner, Dreamtech

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students become aware of dot net technologies and use enumerations, constants, advanced array multiplication, menu features, advanced object oriented techniques, web services.

MICROPROCESSORS AND ASSEMBLY LANGUAGE PROGRAMMING (MALP)
(Common for III B.Tech II Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students understand 8085and 8086 microprocessors and their architecture, assembly language programming, arithmetic instructions and interfacing devices.

Unit -1

8085 Microprocessor Architecture: Microprocessor Architecture and its operations, Memory, Input and Output (I/O) devices. 8085 Microprocessor Architecture.

Unit - 2

Introduction to 8085 Assembly Language programming: The 8085 programming model.
Instruction classification, Instruction and Data format, Procedure to write Assembly Language Programming. Overview of 8085 instruction set

Unit - 3

Introduction to 8085 Instructions: Data transfer operations, Arithmetic operations, Logical operations, Branch operations. **Programming techniques with Additional Instructions:** Programming Techniques Looping, Counting and Indexing. Additional Data transfer and 16 bit arithmetic Instructions, Arithmetic operations related to memory, Logical operations: Rotate & Compare.

Unit - 4

8086 Architecture: CPU Architecture, Internal operation, Machine Language Instructions: Addressing modes, Instruction formats, Instruction execution timing. Assembler Instruction format, Data transfer Instructions.

Unit - 5
Arithmetic Instructions: Binary arithmetic, Packed & unpacked BCD arithmetic, Branch Instructions, Loop Instructions, Logical Instructions, Shift and Rotate Instructions, Directives and operators.

Unit - 6
Linking and Reallocation, Stacks, Procedure, Interrupts and Interrupt routines, Macros. Byte and string manipulation, I/O programming.

Unit - 7
Interfacing devices: Serial communication Interface, 8251 programmable communication Interface (PCI), Parallel communication Interface,

Unit - 8
8255 Programmable peripheral Interface (PPI), 8254 Programmable Interval Timer, Keyboard/ Display controller, DMA controller.

Text books:
1) YU-CHENG LIU, GLENN A.GIBSON [2007], *Microcomputer Systems: The 8086/8088 Family* , TATA McGRAW-HILL EDITION.
2) RAMESH GAONKAR [2008], [Fifth Edition], *Microprocessor Architecture, Programming, and Applications with the 8085*, PENRAM Publications.

Reference books:
1) Barry B.Brey [2005], *The Intel Microprocessors*, Prentice-Hall.
2) DOUGLAS V.HALL [2006], [SECOND EDITION], *MICROPROCESSRS AND INTERFACING*, TATA McGRAW-HILL EDITION.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students understand architectures of 8085 and 8086, TASM, linking and reallocation and various interfacing devices.

NETWORK PROGRAMMING (NP)
(Common for III B.Tech II Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To understand network programming concepts, sockets, tcp client server, elementary UDP sockets, IPC, remote login

Unit-1
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-2
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-3
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-4
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-5
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-6
Elementary name and Address conversions: DNS, gethost by Name function, Resolver option, Function and IPV6 support, uname function, other networking information.

Unit-7
IPC : Introduction, File and record locking, Pipes, FIFOs streams and messages, Name spaces, system IPC, Message queues, Semaphores.

Unit-8
Remote Login: Terminal line disciplines, Pseudo-Terminals, Terminal modes, Control Terminals, rlogin Overview, RPC Transparency Issues.

TEXT BOOKS:
1. UNIX Network Programming, Vol. I, Sockets API, 2nd Edition. - W.Richard Stevens, Pearson Edn. Asia.
2. UNIX Network Programming, 1st Edition, - W.Richard Stevens. PHI.

REFERENCES:
1. UNIX Systems Programming using C++ T CHAN, PHI.
2. UNIX for Programmers and Users, 3rd Edition Graham GLASS, King abls, Pearson Education
3. Advanced UNIX Programming 2nd Edition M. J. ROCHKIND, Pearson Education

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- An in depth knowledge of UDP sockets and the system calls needed to support network programming.
- Ability to understand unix I/O models, UDP, DNS, IPC, RPC transparency issues

ADVANCED DATABASE MANAGEMENT SYSTEMS (ADBMS)
(Common for III B.Tech II Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To make students understand query processing and query optimization, database system architecture, parallel databases , data analysis and mining.

Unit-1
Query processing and Query Optimization:
Measures of Query cost,Selection operation, sorting, join operation, other operations Evaluation of expressions,Transformation of relational expressions, Estimating statistics of expression, choice of evaluation plans.

Unit - 2
Object Based Databases and XML: Complex Datatypes, Structured types and Inheritance in SQL. Table inheritance, Array and Multiset types in SQL, Object identity and reference types in SQL, Implementing O-R features .Persistent Programming Languages, Object-Oriented v/s Object relational.

Unit -3
Database System Architecture : Centralized and Client–server Architectures, server system architectures Parallel Systems, and Distributed systems.
Parallel Databases : Introduction, I/O Parallelism, Inter query Parallelism, Intra query Parallelism, Intra operation parallelism, Inter operation parallelism, Design of Parallel Systems.

Unit - 4
Distributed Databases : Homogeneous and Heterogeneous databases, Distributed data storage, Distributed Transactions, Commit protocols, concurrency control in Distributed databases, Availability, Distributed query processing, Heterogeneous Distributed Databases.

Unit - 5
Data Analysis and mining : Decision – support systems, Data analysis and OLAP, Data mining Data Warehousing.

Unit-6
Information–retrieval systems:Overview,Relevance Ranking Using Terms and Hyperlinks, synonyms,Homonyms and Ontologies, Indexing of Documents,Measuring retrieval Effectiveness,Web search engines, Information retrieval and structured data.

Unit-7
Advanced Data types and New Applications: Motivation, Time in databases, Spatial and Geographic Databases, Multimedia Databases, Mobility and personal Databases.

Unit-8
Advanced Transaction processing: Transaction processing Monitors ,Transactional Workflows, Main memory databases, Real time transaction systems, Long Duration Transactions, Transaction Management in Multi databases.

Text books:

1. Henry F. Korth & Abraham Silberschatz [2006], *Database System Concepts*.

REFERENCE BOOKS:

1. Ramez Elmasri , Navathe [2009], *Fundamentals of Database systems*

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students gain the knowledge of query evaluation and optimization and various types of databases.
- Ability to understand persistent programming languages, information retrieval and advanced transaction processing

SOFTWARE ENGINEERING (SE)
(Common for III B.Tech II Semester CSE & IT)

Scheme: 2010 **Internal Assessment: 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To gain a broad understanding of software engineering discipline and its application to the development and management of software systems.
- To learn the complete software life cycle, software process models and design approaches, risk and quality management.

Unit - 1

Introduction To Software Engineering And Process Models:- The evolving role of software, changing nature of software, software myths.

Software Engineering- A layered technology, A process framework.

Unit - 2

Process Models-The waterfall model, Incremental process models, Evolutionary process models, The Unified process.

Unit - 3

Software Requirement and Requirement Engineering Process: Functional and nonfunctional requirements, User requirements, System requirements, The software requirements document.

Requirement Engineering Process: Feasibility studies, Requirements elicitation and analysis, Requirement validation, Requirement Management.

Unit - 4

Design -Design process and Design quality, Design concepts, Design Model.

Unit - 5

Creating an Architectural Design-Software Architecture, Data Design, Architectural Styles & patterns. Architectural design.

Unit - 6

Testing & Metrics: Testing Strategies-A strategic approach to Software testing, test strategies for Conventional software, White Box Testing-Basis Path Testing, Control Structure Testing, Black Box Testing, Validation Testing ,System Testing, The art of Debugging. Metrics for Process & Products-Software Measurement, metrics for software quality.

Unit - 7

Risk Management: Risk Management-Reactive vs. Proactive risk strategies, software risks, risk identification, risk projection, risk refinement, RMMM, RMMM plan.

Unit - 8

Quality Management: Quality Management-Quality Concepts, software quality assurance, software reviews, formal technical reviews, statistical Software quality assurance, software reliability, The ISO 900 quality standards.

Text books:

1. Sommerville [2008], [7th Edition], *Software Engineering*, Pearson education.
2. Roger S.Pressman [2005], [6th Edition], *Software Engineering, A Practitioner's Approach*, Mc Graw Hill International Edition.

Reference books:

1. K.K.Agarwal &Yogesh Singh [2008], *Software Engineering*, New Age International Publishers.
2. James F.Peters,Witold pedecz,John Wiely [2008], *Software Engineering-an Engineering approach*.
3. Shely Cashman Rosenblatt [2006], *System Analysis and Design*, Thomson Publications.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students get acquainted to process models, requirement engineering process, testing & metrics, risk management and quality management and are able to apply these in the software development process.

COMPILER DESIGN (CD)
(For III B.Tech II Semester IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**
Course Objectives:

- To introduce the major concept areas of language translation and compiler design
- To develop an awareness of the function and complexity of modern compilers.

Unit - 1

Compilers: Basic function of Language translator, differences between compiler and interpreter, bootstrapping, logical phase of a compiler, difference between pass and phase, grouping the phases into passes, compiler construction tools.

Unit - 2

Lexical Analysis: The role of lexical analyser, input buffering, specifications of tokens, recognition of tokens, a language for specifying lexical analysers, design of a lexical analyser generators.

Unit - 3

Syntax Analysis: Role of parser, parsing, top down parsing - recursive decent parsing, predictive parsers, non recursive predictive parsing, bottom up parsing, operator pr4ecedence parsing, L R parsers, using ambiguous grammars, parser generators,

Unit - 4

Syntax Directed Translation: Syntax directed definitions, construction of syntax tree, bottom up evaluation of S attributed definitions, L attributed definitions, top down translation, bottom up evaluation of inherited attributes.

Unit - 5

Semantic Analysis: Typical semantic errors, type checking, type conversions, specification of a simple type checker, equivalence of type expressions, overloading of functions and operators, polymorphic functions, storage allocations, strategies of storage allocation, static, dynamic and heap.

Unit - 6

Intermediate Code Generation: Intermediate code languages - three address code, types of three address code, syntax directed translation into three address code, implementations of three address statements - quadruples, triples, indirect triples, declarations, boolean expressions back patching.

Unit - 7

Code Generation: Issues in the design of code generator, the target machine, run-time storage management, basic blocks and flow graphs, next use information, a simple code generator, DAG representation of basic blocks, , generating code from dags.

Unit - 8

Code Optimization: Introduction to code optimization, principles sources of optimization, optimization of basic blocks, peephole optimization

Text Book:

1. Alfred V.Aho, Ravi Sethi, Jeffrey , D.Ullman [2008], *Compilers Principles, Techniques and tools*, Pearson edition..
2. Alfred V. Aho, Jeffrey D. Ullman [2002], *Principles of Compiler Design*, Naroba Publications.

Reference book:

1. Trembly & Sorenson [2007], *Theory & practice of compiler writing*, MCGrawHill .
2. Niklaus wirth, *Compiler Construction*, Naroba Publications.

Course Outcomes:

- An ability to understand the phases of the compilation process and be able to describe the purpose and implementation approach of each phase.

DOT NET TECHNOLOGIES LAB (DNT(P))
(Common for III B.Tech II Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To understand creating console based applications, window based applications, web applications and deploy them using .NET technology.

List of Experiments:

1. Create a Console Based Application to find sum of rows and columns of n – dimensional matrix.
2. Create a Console Based Application to read the student details and find sum and average of each student.
3. Create a Console Based Application to implement the concept of Multilevel Inheritance.
4. Create a Window Based Application to display the day of the desired date.
5. Create a Window Based Application to simulate ATM machine.
6. Create a Window Based Application to simulate Online Examination.
7. Create a Window Based Application to simulate Notepad.
8. Create a Window Based Application to retrieve and insert the records into the database.
9. Web Application to perform Data Entry and Validation.
10. Web Application to perform Data Base Connectivity Using Data Grid View

Course Outcomes:

- Students are able to create console based applications and also for simulating notepad, data entry, validation and database connectivity

NETWORK PROGRAMMING LAB (NP(P))
(Common for III B.Tech II Semester CSE & IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To understand and implement pipes, Inter Process Communication, file transfer, concurrent and sequential servers.

List of Experiments:

1. Implementing the Pipes.
2. Implementing FIFO
3. Implement file transfer using Message Queue form of IPC
4. Write a program to implement day time client & server
5. Implementation of Chatting Application.
6. Write a program to create an integer variable using shared memory concept and increment the variable simultaneously by two processes. Use semaphores to avoid race conditions
7. Design TCP iterative Client and server application to reverse the given input sentence
8. Design TCP client and server application to transfer file
9. Implementation the Concurrent Servers
10. Implementation of Sequential Servers.

Course Outcomes:

- Students get hands on experience to do network programming using TCP/IP.

ASSEMBLY LANGUAGE PROGRAMMING & COMPILERS LAB (ALC(P))
(For III B.Tech II Semester IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To understand infix to postfix conversion, postfix evaluation, DFA construction for various strings, ALP for searching and sorting

List of Experiments:

1.Conversion from Infix to Postfix

2.Evaluation of Postfix expression

3. a. DFA accepting a string ending with two 0's
   b. DFA accepting a string starts with two 1's
   c. DFA accepting a string with odd number of 0's
   d. DFA accepting a string with even number of 1's

4. Implement LEXICAL ANALYZER

5. Elimination of Left Recursion and Left factor the Grammar

6. Implementing Predictive Parser

7. ALP for Linear Search.

8. ALP for Matrix Addition

9. ALP for Bubble Sort

10. ALP for Binary to BCD conversion.

11. ALP for sum of 'n' numbers.

12. ALP for BCD addition.

Course Outcomes:

- Students are able to construct DFAs for various string, understand lexical analyzer, left recursion and predictive parser and are able to program in assembly language.

FOUR YEAR B.TECH. DEGREE COURSE

Scheme of instruction and Examination

(Effective from 2010-2011)

IV B.Tech (IT) – I Semester **Scheme: 2010**

S. No	Subject	Abbreviation	Credits	Scheme of Instruction periods/week			Duration of End Exam (Hours)	Scheme of Examination		
								Maximum Marks		
				L	D/T	P		End Exam	Internal Assessment	Total
I	**Theory**									
1.	Object Oriented Modeling & Design	OOMD	**5**	**4**	**1**	**-**	3	70	30	100
2.	Data Warehousing & Mining	DWM	**5**	**4**	**1**	**-**	3	70	30	100
3	Cryptography & Network Security	CNS	**4**	**4**	**-**	**-**	3	70	30	100
4.	Parallel Processing	PP	**4**	**4**	**-**	**-**	3	70	30	100
5	Mobile Communication	MCN	**4**	**4**	**-**	**-**	3	70	30	100
6	Professional Elective – I		**4**	**4**	**-**	**-**	3	70	30	100
II	**Practical**									
7	UML Lab	UML(P)	**2**	**-**	**-**	**3**	3	70	30	100
8	Data Warehousing & Mining Lab	DWM(P)	**2**	**-**	**-**	**3**	3	70	30	100
9	Mini Project & Comprehensive viva	MPCV(P)	**3**	**-**	**-**	**4**	-	70	30	100
	Total		**33**	**24**	**2**	**10**		**630**	**270**	**900**

OBJECT ORIENTED MODELLING & DESIGN (OOMD)
(Common for IV B.Tech I Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives

- To enable the students learn and apply the Unified Modeling Language to fundamental object-oriented analysis and design concepts including architecture, objects, classes, components, stereotypes, relationships, and all supporting diagrams.
- To make the students use UML throughout the project lifecycle to capture and communicate analysis and design decisions.

Unit - 1
Introduction: Rational Rose S/W, Working with Rational Rose Environment
Object Oriented System development –Introduction, Overview of the unified approach.
Object basics – Objects, classes, state and properties, behavior and methods, messages, encapsulation,

Unit - 2
Class hierarchy, polymorphism relationships and associations, aggregation and containment, object identity, static and dynamic binding, persistence, Meta –classes.
Object Oriented System life cycle – Analysis, Design .Prototyping, Implementation, component based development.

Unit - 3
Object oriented methodologies –OMT, Booch methodology, Jacobson methodology, Patterns, Unified approach, Layered approach. UML –Introduction, UML class diagrams, Use –case diagram, Interaction diagram, sequence diagram, Collaboration diagram,

Unit - 4
State chart diagram, Activity diagram, component diagram, deployment diagram, packages.
UML extensibility –Model constraints, note, stereotype, UML Meta model.

Unit - 5
Object oriented Analysis: Introduction, business object analysis, use-case modeling, developing effective documentation, case studies.
Object Analysis: classification theory, Noun Phrase approach, use-case driven approach, classes, responsibilities and collaborators, naming classes.

Unit - 6
Object Relationships, attributes and methods –Associations, super and subclass relationships, A-part-of relationship, class responsibilities, defining attributes, Object responsibility: Methods and messages, case studies.

Unit - 7
Object oriented design process and design axioms –corollaries, design patterns.
Designing classes – Introduction, philosophy, class visibility, refining attributes, designing methods and protocols, case studies.
Access Layer – Object store and persistence, DBMS, logical and physical database organizations and access control, client-server computing, distributed objects computing, objects computing,

Unit - 8
Object –relational systems, multi database systems, designing access layer classes, case studies.
View Layer –user interface design, designing view layer classes. Macro-level process, micro - level process, UI design rules, view layer interface, prototyping, case- studies.

Text Books:-
1. Jason T. Roff [2006], *UML a Beginner's Guide*, TATA McGraw- Hill.
2. Ali Bahrami – Irwin [1999], *Object Oriented systems development*, McGraw.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will understand Object Oriented Analysis and Design concepts, learn to represent it with UML and document it using UML modeling tool.

DATA WAREHOUSING & MINING (DWM)
(Common for IV B.Tech I Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L+1T) / week **End Exam Marks: 70**
Credits: 5 **End Exam Duration: 3hrs**

Course Objectives:

- To be able to exploit the knowledge that is held in enterprise data warehouses and other data stores by examining the data to reveal untapped patterns that suggest better ways to improve quality of product, customer satisfaction and retention, and profit potentials.

Unit-1
Introduction, Delivery Process, System Process – Process flow, Extraction and Loading of Data, Clean and Transform Data, Backup and Query Management process.Process Architecture – Various types of Managers and information.

Unit-2
Data Warehousing Components: Overall Architecture,Datawarehouse database, Sourcing, Acquisition Cleanup and Transformation Tools,Meta Data, Access tools, Data Marts, Data warehouse Administration and Management, Information Delivery system.

Unit-3
Building a Data Warehouse: Business considerations, Design considerations, Technical considerations, Implementation considerations, Integrated solutions, Benefits of data warehousing.
Mapping Datawarehouse to Multiprocessor Architecture.

Unit-4
DBMS Schemas for Decision Support: Data layout for best access,Multidimentional data model, Star schema, Star Join and StarIndex,Bitmapped Indexing, Column Local storage, Complex Data types.

Unit-5
Data Extraction, Cleanup and Transformation Tools: Tool Requirements, Vendor Approaches, Access to Legacy data, Vendor Solutions, Transformation Engines, Metadata: Metadata Defined,

Metadata Interchange Initiative, Metadata Repository, Metadata Management, Implementation Examples, Metadata Trends.

Unit-6

Reporting and Query Tools: Reporting Tools, Managed Query Tools, Executive Information system Tools, OLAP Tools, Data Mining Tools. OLAP – Need for OLAP, Guidelines, Categorization

Unit-7

Patterns and Models – Where and What of a Model, Sampling, Experimental Design

Unit-8

Data Mining: Introduction, Decision Trees – What and where How of Decision Trees, Nearest Neighbour and Clustering, General Idea. Case Studies.

Text books:

1. Sam Anahory and Dennis Murray [2008], *Data Warehousing in the Real World*, Pearson Education.
2. Alex Berson, Stephen J. Smith [2008], *Data Warehousing, Data Mining & OLAP*, TMH

Reference books:

1. Jiawei Han, Micheline Kamber, Elsevier [2008], *Data Mining concepts and techniques*.
2. Margaret H. Dunham, S. Sridhar [2003], *Data Mining Introductory and Advanced Topics* , Pearson Education.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes

- Students will understand the conceptual steps involved in data mining and learn how to apply it for solving business problems.

CRYPTOGRAPHY AND NETWORK SECURITY (CNS)
(Common for IV B.Tech I Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To understand the principles of encryption algorithms, Conventional and public key cryptography.
- To describe the mechanisms of message authentication, hash functions and application level security.
- To explain the objectives of information security and to analyze the trade offs inherent in security

Unit-1

Overview: Services, Mechanisms and Attack, The OSI Security Architecture: Security Services, Availability Services, Security Mechanisms and Security Attacks, A model for Network Security.

Unit-2

Classical Encryption Techniques : Symmetric Cipher Model, Substitution Techniques : Caesar Cipher, Monoalphabetic Cipher, Playfair Cipher, Hill Cipher, Monoalphabetic cipher, One-Time Pad, Transposition Techniques.

Unit-3

Block Ciphers and the Data Encryption Standard: Simplified DES, Block Cipher Principles, The DES, The Strength of DES, Differential and Linear Cryptanalysis, Block Cipher Design Principles, Block Cipher modes of Operation

Unit-4

Public Key Cryptography and RSA: Principles of Public Key Cryptosystems, The RSA Algorithm. Key Management: Key Management, Diffie – Hellman Key Exchange

Unit-5

Message Authentication and Hash Functions : Authentication Requirements, Authenticaion Functions, Message Authentication Codes, Hash Functions, Security of Hash Fuctions and MACs.

Unit-6

Hash Algorithms : MD5 Message Digest Algorithm: MD5 Logic, MD5 Compression function, MD4, Strength of MD5, Secure Hash algorithm: SHA-1 Logic, Compression function, Comparison of SHA-1 and MD5, Revised Secure Hash Standard.

Unit-7

Digital Signatures and Authentication Protocols: Digital Signatures, Authentication Protocols: Mutual Authentication, Symmetric Authentication approaches, Public-key Encryption approaches and One-Way Authentication, Digital Signature Standard.

Unit-8

Authentication Applications: Kerberos: Motivation, Kerberos Version 4, Kerberos Version 5, X.509 Authentication Service: Certificates, Authentication Procedures, X.509 Version 3.

Text Books:

1. William Stallings [2008], [4th Edition], *Cryptography and Network Security: Principles and Practices*, Low Price Edition, Pearson Education.

Reference books:

1. William Stallings [2008], [3rd Edition], *Network Security Essentials (Applications and Standards*), Pearson Education.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will analyze a given system with respect to security.
- Students will use cryptographic algorithms to develop schemes to protect computer systems against typical security threats.

PARALLEL PROCESSING (PP)
(For IV B.Tech I Semester IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students will learn and analyze fundamental issues in architecture design and their impact on performance.
- To familiarize the students with parallel processing, multi processor architecture, dataflow and stack computers.

Unit - 1
Introduction to parallel processing: Trends towards parallel processing, parallelism in uniprocessor systems, parallel computer structures, architecture classification schemes, parallel processing Applications, memory hierarchy in parallel processing systems, addressing schemes.

Unit - 2
Pipelining: pipeline concept, linear pipelining and space time diagram, classification of pipeline processor, nonlinear pipeline and reservation table, instruction and arithmetic pipelines.

Unit - 3
Principles of designing pipeline processors-instruction prefetch and branch handling, data buffering and busing structures, internal forwarding and register tagging, hazard detection and resolution, job sequencing and collision prevention.

Unit-4
SIMD Array processors: SIMD structures and algorithms for array processors, organization, masking and routing mechanisms, inter processor communication, parallel algorithms for array processors(matrix multiplication and parallel sorting)

Unit-5
SIMD interconnection network: single stage and multistage network, cube network, barrel shifter, shuffle exchange and omega networks.

Unit - 6
Multiprocessor architecture: Loosely coupled and tightly coupled multiprocessor systems, processor characteristics, interconnection network, timeshared or common busses, crossbar switch and multi port memories, multistage network, banyan and delta networks, parallel memory organization, multiprocessor operating systems, classification and requirements, software requirements for MPS, language features to exploit parallelism.

Unit - 7
Data flow computers: control flow Vs data flow, data flow computer architectures, static and dynamic data flow computers, data flow graphs and languages, data flow and design alternatives-dependency driven approach and multi level driven approaches.

Unit - 8

Stack computers: stacks, arithmetic evaluation stacks, control stacks, storage for simple and structured variables, the parameter preparation stack, combining stacks.

Text books:

1. Kai Hwang, Faye Briggs [1993], *Computer architecture and parallel processing*, MC GRAW HILL.
2. Stone Harolds [1995], *Introduction to computer architecture*, Galgotia.

Reference books:

1. Kai Hwang [1993], *Advanced computer architecture*, MC GRAW HILL.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will be able to identify the factors affecting performance in superscalar processors and the key components, options and tradeoffs that a designer has to consider when designing such processors

MOBILE COMMUNICATION (MCN)
(For IV B.Tech I Semester IT)

Scheme: 2010 **Internal Assessment: 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To expose the students to the concepts of wireless devices and mobile computing.
- To understand characteristics of local and wide area technologies such as Bluetooth, 802.11 and GSM.
- To understand network and transport protocols for wireless networks, including mobile IP and variants of TCP.

Unit-1

Introduction to wireless communication, Wireless transmission

Unit-2

Medium access control: Motivation for a Specialized MAC, SDMA, FDMA, TDMA-Fixed TDM, Classical Aloha, Slotted Aloha, CSMA, Demand assigned multiple access, PRMA packet reservation multiple access, multiple access with collision avoidance, Polling. CDMA, Comparison of S/T/F/CDMA.

Unit-3

Telecommunications System: GSM-Mobile Services, System Architecture, Radio interface, Protocols, Localization and calling, Handover, Security.

Unit-4

DECT, TETRA

Unit-5

Wireless LAN: Infrared Vs Radio Transmission, Infra Red and ad-hoc network,
IEEE 802.11 protocol Architecture, 802.11 medium access control, 802.11 physical layer.

Unit-6

HIPERLAN, Bluetooth- Overview, Radio specification, Base band specification, Links manager specification, Logical link control and adaptation protocol

Unit-7

Mobile Network Layer: Mobile IP Mobile IP Operation of mobile IP, Co-located address, Registration, Tunneling, Dynamic host Configuration protocol.

Unit-8

Mobile Transport Layer: Traditional TCP, Classical TCP improvements.

Textbooks:

1. Jochen Schiller [2008], [Second Edition], *Mobile Communications*, Low price edition Pearson Education.

Reference books:

1. Talukder [2008], *Mobile Computing: Technology, Applications & service creation*, TMH.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will understand the concept of mobile computing and the architecture of mobile communications.
- Students understand wireless access and core networks and mobility in cellular and wireless networks using the important standards like GSM, CDMA, GPRS and IEEE 802.11.

UNIFIED MODELLING LANGUAGE LAB (UML(P))
(Common for IV B.Tech I Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To enable the students learn and practice object-oriented analysis and design using UML diagrams on a particular application.
- To expose the students to various tools that support UML and Object Oriented software development.

List of Experiments:

1. Introduction to unified modeling language(UML)
2. Implementation of Case Studies
3. Mini Project1: Elevator problem.
4. Mini Project2: on line book shop.
5. Mini Project3: library system.
6. Mini Project4: ATM system.
7. Mini Project5: Student Information System.
8. Mini Project6: Vending Machine.
9. Mini Project7: Graphics Editor.
10. Mini Projects: Payroll Systems

Course Outcomes:

- Students will apply the object oriented design methodology in the design of mini project.
- Students understand forward and reverse engineering techniques.

DATAWAREHOUSING & MINING LAB (DWM(P))
(Common for IV B.Tech I Semester CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: 3 P/week **End Exam Marks: 70**
Credits: 2 **End Exam Duration: 3hrs**

Course Objectives:

- To understand the need of Data Warehouses over Databases, and the difference between usage of operational and historical data repositories.
- To be able to differentiate between RDBMS schemas & Data Warehouse Schemas.

List of Experiments:

1. Understanding Source Qualifier and Implementing it.
2. Implementation of Joiner
3. Implementation of Filters
4. Implementation of Constraint Based Loading
5. Implementation of Merging
6. Implementation of Sorting
7. Implementation of Sequencing
8. Transforming the Data from XML to DATABASE
9. Transforming the Data from FIXED FLAT FILE to DATABASE
10. Transforming the Data From DELIMITED FILE to DATABASE

Course Outcomes:

- Students will be able to mine Statistical Measures in large databases
- Students can differentiate between Classification & Clustering

FOUR YEAR B.TECH. DEGREE COURSE

Scheme of instruction and Examination

(Effective from 2010-2011)

IV B.Tech (IT) –II Semester **Scheme: 2010**

S. No	Subject	Abbreviation	Credits	Scheme of Instruction periods/week			Duration of End Exam (Hours)	Scheme of Examination		
								Maximum Marks		
				L	D/T	P		End Exam	Internal Assessment	Total
I	**Theory**									
1.	Professional Elective – II		**4**	**4**	**-**	**-**	3	70	30	100
2.	Professional Elective – III		**4**	**4**	**-**	**-**	3	70	30	100
3.	Open Elective - II		**2**	**2**	**-**	**-**	-	-	100	100
II	**Practical**									
4.	Project work	**PW(P)**	**10**	**–**	**–**	**6**	**–**	70	30	100
	Total		**20**	**10**	**-**	**6**	**–**	**210**	**190**	**400**
OR										
I	Practice School / Internship	**PS**	**10**	-	-	-	-	-	100	100
II	Project Work	**PW(P)**	**10**	**–**	**–**	**–**	**–**	70	30	100
	Total		**20**	**–**	**–**	**–**	**–**	**70**	**130**	**200**

LIST OF OPEN ELECTIVES

Open Elective- I

1. Professional Ethics and Human values (PEHV)
2. Intellectual Property Rights (IPR)
3. Entrepreneurship Development (EDP)

Open Elective- II

1. Indian Constitution and Society (ICTS)
2. Research Methodology (RM)
3. General Psychology (GPY)

PROFESSIONAL ETHICS AND HUMAN VALUES (PEHV)
(Open Elective-I – for III B.Tech II Semester All Branches)

Scheme: 2010 **Internal Assessment: 100**
Contact Periods: (2L)/week
Credits: 2

Course Objectives:

- To create an awareness on Engineering Ethics and Human Values.
- To understand social responsibility of an engineer and appreciate ethical dilemma while discharging duties in professional life.

Unit - 1

Human Values : Morals- Values- Ethics-Integrity-Work Ethic- Respect for others-Peaceful Life-Honesty- Courage Valuing Time- Empathy- Character- Spirituality

Unit - 2

Engineering Ethics : Senses of Engineering Ethics- Variety of Morals-Types of Inquiry-Kohlberg's Theory- Gilligan's Theory-Consensus & Controversy-Models of Professional Roles -Customs and Religion-Uses of Ethical Theories

Unit - 3

Safety, Responsibilities & Rights : Safety and Risk-Risk benefit analysis and reducing risk-Collegiality and loyalty-Respect for Authority
Confidentiality-Occupational Crime-Professional Rights-Employee Rights-Intellectual property Rights (IPR) – it's Discrimination

Unit - 4

Global Issues : Multinational Corporations-Environmental Ethics-Computer Ethics-Engineer as Managers-Consulting Engineer-Moral Leadership-Sample ode of Ethics Like ASME, ASCE, IEEE, Institute of Engineers, Indian Institute of Materials Management, IETE etc.

Text Book :

1. M.P. Raghavan [2006], *Professional Ethics And Human Values*-, Scitech Publications (I) private limited.

Reference Books :

1. Mike Martin and roland Schinzinger[1996], *Ethics in Engineering*, McGraw Hill, New York.
2. Charles D.Fleddermann[1999], *Engineering Ethics*, prentice Hall, New Mexico,.
3. S. Dinesh Babu [2007], *Professional Ethics & Human Values*, Laxmi publications.

Course Outcomes:

- Ability to utilize the professional competence for augmenting universal human order.
- Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems.

INTELLECTUAL PROPERTY RIGHTS (IPR)
(Open Elective-I – for III B.Tech II Semester All Branches)

Scheme: 2010 **Internal Assessment: 100**
Contact Periods: (2L)/week
Credits: 2

Course Objectives:

- To develop IPR awareness among the students and to improve their exposure to IP basic legal concepts.

Unit -1
Basics of IPR : Introduction to IPR-IPR Systems-Benefits of IPR-Various Types of IPR-Violation of IPR

Unit -2
Patents : Introduction to Patents-Various kinds of Patents-Patenting Process-Copy Right-Remedies against Infringement

Unit - 3
Method of Designing Registrations : Designing Registrations-How Chart for Registration-Trade Mark-Geographical Indications
Integrated Circuits-Trade Secrets

Unit - 4
IPR Policy and Management: IP in various sectors like Government and Nation-R &D organizations-IT, Media, Entertainment
Chemical Engineering & Services Sector-Industries & Small Scale Industry

Text Books :

1. BainBridge David [2003], *Intellectual Property Rights: Key to New Wealth*, National Research Development Corporation.
2. Prabuddha Ganguli [2006], *Intellectual Property Rights*, TMH.

Course Outcomes:

- Able to acquire fundamental competencies with regard to intellectual property rights.

ENTREPRENEURSHIP DEVELOPMENT (EDP)
(Open Elective-I - for III B.Tech II Semester All Branches)

Scheme: 2010 **Internal Assessment: 100**
Contact Periods: (2L)/week
Credits: 2

Course Objectives:

- To promote entrepreneurial culture amongst students and help them acquire competencies needed for setting up small enterprises.

Unit - 1

Introduction : Concept of an entrepreneur; Definition of an entrepreneur; Types of entrepreneurs; Characteristics of an entrepreneur.

Entrepreneurship : Definitions; Theories of entrepreneurship; Key elements of entrepreneurship; Six important segments of entrepreneurship environment; Advantages of entrepreneurship; Barriers to entrepreneurship; Role of entrepreneurship in economic development.

Unit - 2

Rural Entrepreneurship : Meaning; Need; Retrospection of rural industrialization in India; Problems of rural entrepreneurship; Development plan for rural entrepreneurship.

Small Enterprises : Definition of SSI; Types, Characteristics of SSI; Role of SSI in economic development; Problems faced by SSI.

Unit - 3

Project Planning : Project Identification; Project Selection; Project Report – Contents & Formulation; Methods of Project Appraisal.

Ownership Structures : Sole Proprietorship; Partnership; Company; Co-operative; Selection of appropriate ownership structure.

Unit - 4

Institutional Finance : Commercial banks; Other Financial Institutions – IDBI, IFCI, ICICI, IRBI, SFC, SIDC, SIDBI & EXIM Bank.

Institutional Support : Need; Support to Small Entrepreneurs – NSIC, SIDO, SSIB, SSIDC, SISI, DICs.

Text Books :

1. Prof. Satish C. Ailawadi & Mrs. Romy Banerjee [2007], *Principles of Entrepreneurship*, Everest Publishing House Pub.

2. S.S. Khanka and V.G.Patel [2007], *Entrepreneurial Development*, S. Chand & Company Ltd. Pub.

Course Outcomes:

- Be able to build on personal as well as external resources with a view to successfully launching and subsequently managing their enterprises.

INDIAN CONSTITUTION AND SOCIETY (ICTS)
(Open Elective-II - for IV B.Tech II Semester All Branches)

Scheme: 2010 **Internal Assessment: 100**
Contact Periods: (2L)/week
Credits: 2

Course Objectives:

- To create a meaningful understanding of basic philosophical tenets of Indian Constitutional Law.

Unit - 1
Historical back ground-Preamble to the Constitution of India-Fundamental rights-Derivative principles of state policy-Elections in India- Indian Judiciary

Unit - 2
Union Executive: Structures of Union Government & Functions-President-Vice President-Prime Minister-Cabinet
Parliament-Supreme Court of India
State Executive : Structures and Functions-Governor-Chief Minister-Cabinet-State Legislature-High Courts & Sub ordinate courts

Unit -3
Central – State Relations-President's Rule-Constitutional Amendments [42, 44, 74, 76, 86 & 91]-Constitutional functionaries-Working of Parliamentary system in India

Unit - 4
Nature, Meaning & Definition, Indian Social Structure-Language in India-Political Parties & Presume groups-Right of Women-S.C's, S.T's & other weaker sections.

Text Books :
1. Durga Das Basu [2006], *Introduction to the Constitution of India*, Wedwe & Company.
2. Macivel & Page, *Society – An Introduction Analysis*.

Course Outcomes:

- Be able to know how constitution govern the allocation of power in society and the way in which the Indian constitution was made.

RESEARCH METHODOLOGY (RM)
(Open Elective-IV – for IV B.Tech II Semester All Branches)

Scheme: 2010 **Internal Assessment: 100**
Contact Periods: (2L)/week
Credits: 2

Course Objectives:

- To develop a thorough understanding of the issues involved in planning, designing, executing, evaluating and reporting research.

Unit -1
Research Methodology : Introduction -Objectives of Research-Types of Research-Research Methods (Vs) Methodology
Researching process-Technique involved in defining a problem

Unit -2
Research Design and Sampling Design : Need for Research Design-Features of good Design-Concepts Related to Research Design-Different research designs-Basics Principles of Experimental Designs-Steps in sampling design-Characteristics of good sample design-Various types of sample designs-Complex Random sampling designs

Unit - 3
Data Collection and Processing :
Data Collection through observation method & Interview Method-Data Collection through Questionnaires & schedules -Collection of Secondary data
Processing : Measures of Central Tendency-Measures of Dispersion-Measures of Asymmetry -Measures of Relationship-Simple Regression Analysis-Chi-square Test for comparing valiance

Unit -4
Sampling Fundamentals & Report writing : Central Limit Theorem-Sampling Theory-Concept of standard error-Estimating population Mean-Sample size & Determination-Technique for Interpretation-Significance of Report writing-Types of Reports-Mechanics of writing a Research Report

Text Book:
1. C.R. Kothari [2004], *Research Methodology (Methods & Techniques)*, New Age International Publishers.

Course Outcomes:

- Able to understand overview of research process, state research problem and conduct a preliminary literature review of the concepts comprising the research questions.

GENERAL PSYCHOLOGY (GPY)
(Open Elective-IV – for IV B.Tech II Semester All Branches)

Scheme: 2010 **Internal Assessment: 100**
Contact Periods: (2L)/week
Credits: 2

Course Objectives:

- To explain the primary objectives of psychology: describing, understanding, predicting and controlling behavior and mental processes.

Unit - 1

Introduction : Defining Psychology & Behavior-Branches and fields of Psychology-Utility of Psychology

Methods of Psychology : Introspection Method-Naturalistic observation-Experimental Method-Differential Method-Clinical Method-Psycho Physical Methods

Unit – 2

Physiological Basis of Behavior : The Neuron-Central Nervous system-Brain and localization of Brain functions-Spinal chord
Influence of Nervous system on human behavior-Endocrine system and it's impact-The role of heredity and environment in the development of personality

Unit -3

Instincts, Emotions Senses and Sensitivity : Instincts and Reflex actions-Emotion & it's characteristics-Physiology of Emotions-Sensation and Sensitivity
Thinking, Reasoning and Problem solving : Nature of thinking-Elements of thoughts-Tools of thinking-Rigidity-Types of thinking-Reasoning & types-Problem solving and it's methods

Unit - 4

Motivation and Behavior & Attention & Learning : Biological and socio psychological Needs-Drives and Incentives-Motives and Types of Motives-Types & Effect of attention-Types of Learning-Problem Solving-Mechanism of Memorization

Intelligence – Aptitude – Personality : Nature of Intelligence-Concept of Metal age and IQ-Constantly of IQ-IQ Classification-Aptitude Ability & Achievement-Measurement of Aptitude -Features and Characteristics of Personality-Personality Assessment-Walters social Learning Theory

Text Book:
1. S.K. Mangal [2005], *General Psychology*, Sterling Publishers Private Limited.
Reference Book :
1. Saundra K.Ciccarelli&Gkenn E.Meyer [2007], *Psychology*, Dorliing Kindersley (I) Pvt Limited .

Course Outcomes:

- Be able to articulate the general history of psychology by explaining depth and breadth of the field from the perspective of a future educator or researcher.

LIST OF PROFESSIONAL ELECTIVES

1. Real Time Systems (RTS)
2. Electronic Commerce (ELC)
3. Artificial Intelligence (AI)
4. Optimization Techniques (OPT)
5. Software Quality and Testing (SQT)
6. Distributed Operating System (DOS)
7. Client/Server Computing (CSC)
8. Management Information System (MIS)
9. Computer Simulation & Modeling (CSM)
10. Design Patterns (DP)
11. Internet Protocols (INP)
12. Middleware Technologies (MWT)
13. Multimedia Applications (MMA)
14. Image Processing (IP)
15. Software Project Management (SPM)
16. Visual Programming Techniques (VPT)
17. Cloud Computing (CC)
18. Introduction to Mainframe Systems (IMS)
19. Data Mining and Business Analytics (DMBA)
20. Systems Programming (SYP)

REAL TIME SYSTEMS (RTS)
(Professional Elective Common for IV B.Tech CSE and IT)

Scheme: 2010 **Internal Assessment: 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- Students will learn real time system life cycle and resource allocation methods

Unit - 1
Time Handling - Representation of Time - Time Constraints - Time Service and Synchronization - Master-Slave Algorithms - Distributed Clock Algorithms.
Objects - Basic concepts - Requirements for Exceptions - Guarantees in Hard Real - Time Systems. Adding Time to Objects: Temporal Relations - Calendars.

Unit - 2
The Real-Time System Life Cycle - Requirements Specification - State charts. Structured Design Approaches - Event-based Model - Process-Based Structured Design

Unit - 3
Language Support Restrictions - Real-Time Programming Discipline - Real-Time Programming Languages Schedulability Analysis. Verification and Validation of Real-Time Software - Testing Real-Time Properties - Simulation as Verification Tool - Testing Control and Data Flow - Proof Systems - Operational Approach.

Unit - 4
Properties of Real-Time Operating Systems - Current Operating Systems - Resource Management/Allocation Scheduling, Processor allocation, Architecture dependency - Time Services – Communication, Message passing, Error Handling, Issues of Efficiency in Implementation- Name Servers - Data Access Strategy - Fault Tolerance - Other Services.

Unit-5
Allocating and Scheduling
Problem Definition - Rate Monotonic Priority Scheduling Algorithms Next-Fit-M portioning for Rate monotonic Schedulers - Allocation with Minimization of IPC - Allocation with Bottleneck Processor Load Minimization - Allocation with Load Balance Optimality Constraint - Serving Non-Real-Time Tasks by a Real-Time Scheduler Heuristic Approach in Scheduling - Imposing Precedence and Resource Requirements.

Unit-6
Verification of Schedulability
Feasible Schedule Conditions - Algorithms Principles - The Verification Algorithm for Convex Constraint - The verification Algorithm for Convex Constraint - The verification Algorithm for Non-Convex Constraint.

Unit-7
Resource Allocation –
Definitions and Formulation - Allocation Algorithm Message types used ,principles of allocation initiation, principles of algorithm for allocator, local and external variables, the allocation algorithm - Allocation Algorithm Properties - Reallocation upon Failure.

Unit - 8

The Maruti Operating System: Introduction - Maruti Components Operational Issues and Examples - Execution and Distribution Considerations - Job Acceptance in Maruti - Some Examples of Design.

Text Book:

1. Shem, Tov Levi, Ashok K.Agarwal [1989], *Real Time System Design*, MgH IST.

Reference Books:

1. S.T.Allworth and R.N.Zobel [1989], [2nd Edition], *Introduction to Real time software design*, McMillan Education Ltd.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Able to understand the characteristics of real-time OS and various operating systems.

ELECTRONIC COMMERCE (ELC)
(Professional Elective Common for IV B.Tech CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To be able to communicate company, name its strong points, products and services, benefits, prices, customer list, etc. to new customers & prospects and to know the risks associated with business transactions.

Unit - 1

Electronic Commerce - overview definitions, benefits, impacts Electronic Commerce and the role of independent third parties Regulatory environment

Unit - 2

EDI – Traditional EDI. Data transfer standards, EDI systems and internet, Impact.
Risk of insecure systems – Overview, Internet associated risks; Intranet associated risks, social Engineering.

Unit - 3

Risks associated with business transaction, confidentiality, viruses.
Risk - management – control weakness (vs.) control risk-Risk management paradigms, Disaster recovery plans.

Unit - 4

Internet Security standards – standard setting committees, Security protocols and languages: messaging protocols. Secure Electronic payment protocols.

Unit - 5

Cryptography And authentication – Messaging security issues. Encryption techniques. Key management.

Unit - 6
Firewalls, Electronic commerce payment mechanisms, Intelligent agents

Unit - 7
Retailing in Electronic commerce- Business models of Electronic marketing. Procedure of internet shopping .

Unit - 8
Advertisements in Electronic commerce –web advertisements. Advertisement method, strategies, push technology, Online catalogs.
Electronic commerce for service industries,Business –to –business Electronic commerce

TEXT BOOK:
1. Greenstien Feinman [2001],*Electronic commerce security risk mangament and control*", TMH.
2. Efrain Turban, Jae Lee, David King, H.Michael Chung [2008], *Electronic commerce – A Management Perspective*, Pearson Education

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Ability to reduce overall marketing expenses and will be able to understand different business models of electronic marketing, Web advertisements, online catalogs etc.

ARTIFICIAL INTELLIGENCE (AI)
(Professional Elective Common for IV B.Tech CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To be able to understand the main approaches to artificial intelligence such as state space search approaches (state space search, constraint satisfaction, planning, reinforcement learning) and model search approaches (regression, neural networks, bayesian networks, decision trees).
- To explore areas of application such as knowledge representation, natural language processing, expert systems.

Unit - 1
What is Artificial Intelligence? - The AI problems, the underlying Assumption, What is an AI Technique? The level of the model, Criteria for success, Problems, problem spaces, and search - defining the problem as a state space search, production systems

Unit - 2
Problem characteristics, production system characteristics, issues in the design of search programs.

Unit - 3

HEURISTIC SEARCH TECHNIQUES - Generate and test- travelling sales man problem, Hill climbing, Best first search, problem reduction, constraint satisfaction, Mean ends analysis

Unit - 4

KNOWLEDGE REPRESENTATION - Representations and mappings, approaches to knowledge representation, The Frame Problem. Using Predicate logic - Representing simple facts in logic, Representing Instance and Isa relationships, Resolution.

Unit - 5

REPRESENTING KNOWLEDGE USING RULES - Procedural versus declarative knowledge, logic programming, forward versus backward reasoning, matching.

Unit - 6

WEAK SLOT AND FILLER STRUCTURES - Semantic nets, Frames.
STRONG SLOT AND FILLER STRUCTURES - Conceptual dependency, scripts, CYC

Unit - 7

GAME PLAYING - MIN MAX search procedure, Adding Alpha Beta cutoffs.

Unit - 8

Learning – Learning from Observations – Forms – inductive - Learning Decision Trees, Essemble Learning, Knowledge in Learning – A Logical Formulation of Learning, Knowledge in Learning, EBL, Learning Using Relevance information, Inductive Logic Learning, Passive Active and Generalization in Reinforcement Learning. case studies : MYCIN, PROSPECTOR, XCON.

TEXT BOOKS:

1. Elaine Richie Kevin Knight [2008], [2nd Edition], *Artificial Intelligence*, TMH.
2. Stuart Russell, Peter Norvig [2008], [2nd Edition], *Artificial Intelligence A Modern Approach*, Pearson Education.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students have an understanding of the basic issues of knowledge representation and heuristic search, as well as an understanding of other topics such as minimax, resolution, etc. that play an important role in AI programs.
- Students are able to have knowledge of some of the more advanced topics of AI such as learning, natural language processing, expert systems, and game playing.
- The graduates will pay own role as professionals efficiently and effectively in Robotics and medicines.

OPTIMIZATION TECHNIQUES (OPT)
(Professional Elective Common for IV B.Tech CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To be able to will learn linear programming, min-max principle and replacement models.
- To understand the project management, replacement models and inventory control

Unit - 1

Linear Programming : Introduction, Formulation of linear programming problems, Graphical Solution of LPP, simplex method, Big M method, solution in case of unrestricted variables, Degeneracy in LP, Dual linear programming problem, Solution of the primal problem from the solution of the dual problem, Special cases in LPP -unbounded infeasible and multiple optimum solution.

Unit - 2

Transportation Problems: Finding an initial feasible solution – North West Corner method, Least cost method, Vogel's Approximation method, Finding the optimal solution, Special cases in Transportation problems - Unbalanced Transportation problem, Degeneracy in transportation problem, multiple optimum solutions, prohibited routes.

Unit - 3

Assignment problems: Hungarian method of Assignment problem, maximization in Assignment problem, unbalanced Assignment problem, prohibited Assignments, multiple optimum solutions, Traveling salesman problem.

Unit - 4

Queuing Theory: Introduction, Single Channel – Poisson arrivals – exponential service times with infinite population (M/M/1 : ∞ / FCFS) & finite population (M/M/1 : N / FCFS), Multi channel – Poisson arrivals – exponential service times with infinite population. (M/M/S : ∞ / FCFS

Unit - 5

Game Theory : Introduction, 2 person zero sum games, maximin-minimax principle, Principle of dominance, solution of mixed strategy problems, Graphical method for 2 x n and m x 2 games, solution of game by linear programming, Iterative method for m x n game.

Unit - 6

Project management: Introduction, Rules for drawing network diagram, Project Evaluation & Review Technique (PERT), Event time computations-Earliest expected time and latest allowable Occurrence time, Slack, Critical Path, Critical Path method (CPM), Activity time estimates (EST,EFT,LST,LFT) , Total Float, Free Float, Independent float.

Unit - 7

Replacement Models*:* Introduction, replacement of items that deteriorate ignoring change in money value, replacement of items that deteriorate considering change in money value with time, replacement of items that fail suddenly – Individual replacement policy, Group replacement policy.

Unit - 8

Elements of Inventory Control: Introduction, Inventory Costs, Inventory models-Purchase model with instantaneous replenishment and without shortages, Manufacturing model without shortages, Purchase model with instantaneous replenishment and with shortages, Manufacturing model with shortages, Inventory models with price breaks, Fixed order inventory system and Periodic review system.

Simulation: Introduction, Simulation languages, application of simulation to inventory control and queuing.

Text Books:

1. S.D. Sarma [2009], *Operations Research.*
2. V.K.Kapoor and Kapoor Sumanth [2004], *Operations Research*.

Reference:

1. Billy E Gillet [2003], *Introduction to Operations Research: A computer oriented algorithmic approach*, TMH.
2. N.D. Vohra [2002], [2nd Edition], *Quantitative Techniques in Management.*
3. Hillier & Lieberman [1987], *Operations Research.*

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students learn linear programming , project management, replacement models and inventory control.

SOFTWARE QUALITY & TESTING (SQT)

(Professional Elective Common for IV B.Tech CSE and IT)

Scheme: 2010 **Internal Assessment: 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To understand the quality management models, system testing and maintaining software.

Unit-1

Software Quality: What is Software quality, Total Quality management.
Software quality metrics, product quality metrics, In-process quality metrics, metrics for software quality maintenance, Examples.

Unit-2

Quality tools in software development: Seven basic tools, check list, pareto diagram, histogram, run charts, scatter diagram, control chart, cause and effect diagram.

Unit-3

Defect Removal Effectiveness: Literature review of defect removal, defect removal effectiveness, quality planning, cost effectiveness of phase defect removal, Defect Removal Effectiveness and Process Maturity Level.

Unit-4

Reliability growth models: Reliability growth models, Model assumptions, criteria for model evaluation, modeling process, test compression factor.

Unit-5

Quality Management Models: The Rayleigh model framework, The Code Integration Pattern, PTR sub model, reliability growth models, criteria for model evaluation, metrics, and reports, ISO 9000 and CMM.

Unit-6

Testing the Programs: Software testing, Software faults and failures, Testing issues, Unit testing, integration testing, testing object oriented systems, test planning, Automated testing tools,

Unit-7

Testing the System: principles of system testing, , Function and performance testing, Reliability, availability and maintainability, Acceptance testing, installation testing, automated system testing, test documentation, safety critical systems, Example.

Unit-8

Delivering the System: Training, documentation, information systems.

Maintaining the Software: The changing system, nature of maintenance and problems, Maintenance techniques and tools, software rejuvenation.

TEXTBOOKS:

1. Stephen H. Kan [2008], *Metrics and Models in Software Quality Engineering*, Addison Wesley Publishing Co.
2. Shari Lawrence Pfleeger [2005], *Software Engineering Theory and Practice*, Prentice Hall, Inc.
3 Srinivasan.D, Gopalaswamy.R [2007], *Software Testing principles and practices*, Pearson Education.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will learn software quality methods and testing.

DISTRIBUTED OPERATING SYSTEM (DOS)
(Professional Elective Common for IV B.Tech CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To learn the fundamental principles of distributed systems, emphasizing on communication, process, naming, synchronization, consistency and replication, and fault tolerance in distributed systems.

Unit - 1

Distributed Operating System: Goals, Hardware Concepts-Bus Based Multiprocessors, Switched Multiprocessors, Bus Based MultiComputers, Switched MultiComputers, **Software Concepts**-Network Operating Systems, True Distributed Systems, and Multiprocessor Timesharing Systems. **Design Issues**-Transparency, Flexibility, Reliability, Performance, Scalability.

Unit - 2

Communication in Distributed Systems: Layered Protocols, **Client-Server Model**-Clients& Servers, An Example, Addressing, Blocking Vs Non blocking Primitives, Buffered Vs UnBuffered Primitives, Reliable Vs Unreliable Primituves, Implementing Client-Server Model, **Remote Procedure Call**-Basic RPC Operation, Parameter Passing, Dynamic Binding, RPC Semantics in presence of failures, Implementation Issues, **Group Communication**-Introduction, Design Issues, Group Communication in ISIS.

Unit - 3

Synchronization in Distributed Systems: Clock Synchronization-Logical Clocks, Physical Clocks, Clock Synchronization Algorithms, Use of Synchronized Clocks, **Mutual Exclusion**-Centralized Algorithm, Distributed Algorithm, Token Ring Algorithm, **Election Algorithms**-Bully Algorithm, A Ring Algorithm, **Atomic Transactions**-Introduction, The Transaction Model, Implementation, Concurrency Control, **Dead Locks**-Distributed Deadlock Detection and Prevention.

Unit - 4

Processes And Processors in Distributed Systems: Threads-Introduction, Threads Usage, Design Issues, Implementing a Threads Package, Threads and RPC ,**System Models**-Workstation Model, Using Idle Workstations, Processor Pool Model, Hybrid Model.

Unit – 5

Processor allocation-Allocation Models, Design Issues for Process Allocation Algorithms, Implementation Issues for Process Allocation Algorithms, Example Process Allocation Algorithms, **Scheduling in Distributed Systems.**

Unit - 6

Distributed File System: Distributed File System Design-File Service Interface, Directory Service Interface, Semantics of File Sharing, **Implementation**-File Usage, System Structure, C**a**ching, Replication, **Trends in Distributed File System**.

Unit - 7

Introduction to Database Operating Systems, Concurrency Control-Introduction,Database Systems Problem of Concurrency Control,Serializability Theory,**Concurrency Control Algorithms**-Introduction,Basic Synchronization Primitives,Lock Based Algorithms,TimeStamp Based Algorithms,Optimistic Algorithms,Concurrency Control Algorithms:Data Replication

Unit - 8

Case Study Amoeba: Introduction, **Objects and Capabilities**-Capabilities, Object Protection, Standard Operations, **Memory Management**-Segments, Mapped Segments.

Communication in AMOEBA-Remote Procedure Call, Group Communication, Fast Local Internet Protocol, **AMOEBA Servers**-Bullet Server, Directory Server, Replication Server, Run Server, Boot Server,TCP/IP Server.

Text Books:

1) Andrew S. Tanenbaum [2008] *Distributed Operating System,* PE.
2) Mukesh Singhal, Niranjan G. Shivaratri [1994], *Advanced Concepts in Operating Systems*.[VII UNIT]

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Able to learn the goals and fundamental concepts of distributed operating system, communication models, synchronization algorithms, threads, implementation issues for process allocation.

CLIENT SERVER COMPUTING (CSC)
(Professional Elective Common for IV B.Tech CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To learn client-server requirements, hardware and software requirements

Unit-1
What is client/server computing, Benefits of client/server computing, Evolution of client/server computing. Hardware Trends, Software Trends, components of client/server applications, classes of client/server applications, categories of client/server applications. Understanding of client/server computing : Dispelling the Myths, Obstacles – Upfront and hidden, open systems and standards – settings, organizations, factors for success.

Unit - 2
Client Hardware & Software: - Client components, client operating systems, what is GUI?, X-Windows versus Windowing, Database access, application logic, client software products: GUI environments, converting 3270/5250 screens, database access tools.

Unit - 3
Client Requirements : GUI design standards , open GUI standards, Interface independence, Testing interfaces, Developments aids.

Unit-4
Server Hardware: - Bench marks, categories of servers, features of server machines, classes of server machines, Eight layers of software , Network management environment Network computing environment, extensions, network operating system, loadable modules, server operating systems: OS/2 2.0, windows new technology, Unix based operating systems.

Unit-5
Server Requirements: - Platform independence, transaction processing, collectivity, intelligent database, stored procedures, triggers, load leveling, optimizer, testing and diagnostic tools, reliability, backup and recovery mechanisms.

Unit-6
Server data management and access tools: Data manager features. Data management software, database gateways, overview of networking, LAN hardware, network operating systems.

Unit-7
Development & Development Methodology: - Convert existing screen interfaces COBOL to COBOL migration, reengineering existing applications, business reengineering, methodology tools, application development environments, distributed transaction management, integrating multi vendor environments, production requirements.

Unit-8

mobile computing, more Robust servers, integration of network and server operating systems, use of object technologies, ATM switching.

Text Book:

1. Dawna Travis Dewire ,James Martin [2003], *Client/Server computing,* McGraw-HILL PRODUCTIVITY SERIES.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Students will understand the client-server technologies and requirements and developments.

MANAGEMENT INFORMATION SYSTEMS (MIS)
(Professional Elective Common for IV B.Tech CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To learn information systems, developing long range information plan and also develop and implement application systems.

Unit - 1
Introduction to Management Information systems: An overview and structure of management information system.

Unit - 2
Survey of Information Systems: Hardware, software, and communications technology for information systems, storage and retrieval of data, transaction processing, office automation.

Unit - 3
The decision making process, system concepts-Types of systems, subsystems. preventing system entropy, concepts of planning and control.

Unit - 4
Organizational structure and management concepts-The basic model and modifications of organizational structure, organizational culture and power, organizational change and management theories.

Unit - 5
support systems for planning, control, and decision making, support systems for management of knowledge work.

Unit - 6
Developing a long range information system plan, strategies for the determination of information requirements.

Unit - 7
Database requirements-introduction to DBMS, Data Models, Normalization, user interface requirements.

Unit - 8
Developing and Implementing application systems: quality assurance and evaluation of information systems, organization and management of the information resources function.

Text books:
1. Gordon B.Davis and Margrethe H.Olson [2007], *MANAGEMENT INFORMATION SYSTEMS.*
Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Ability to understand the management information systems concepts and strategies for the determination of information requirements.

COMPUTER SIMULATION & MODELLING (CSM)
(Professional Elective Common for IV B.Tech CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students learn computer simulation methods and simulation using GPS

Unit - 1
Introduction to computer simulation: Definition, types of models, characteristics of mathematical Model, basic concepts and terminology, simple simulation model, Uses of simulation, life cycle of simulation model, applications of Simulation.
Unit - 2
Monte carlo inventory simulation: Basic inventory concepts, fixed order quantity model, monte carlo Inventory model.
Random number generation: Properties, methods for generating random numbers, digital computer Methods, statistical tests for randomness, testing random numbers from The IBM pc versions of basic.

Unit - 3
Simulating queuing models: Basic terminology, simple queuing system, approaches to queuing Problems, important characteristics of queuing system, simulating Tool crib operation.

Unit-4
Special purpose simulation languages: Advantages & disadvantages of simulation languages, selection Criteria of simulation language, simulation languages: GPSS, SLAM, GEMS, SIMSCRIPT, IFPS, current trends in simulation Languages.

Unit - 5
General purpose simulation system (GPSS): Introduction, elementary concepts in GPSS, Nature of a model, transactions, Facilities, structure of a model, syntax of a GPSS, storage and some SNAS.

Unit-6
Simulation of a toy robot: Manufacturing system, an orderly service canteen, gates Logic switches and tubes, variables, select and count, GPSS features.
Unit - 7

Simulation using GPSS: Block diagrams, stopping simulation, preparing program, program Output, parallel servers, negative exponential processes, controlling Model.

Unit - 8

Simulation using SLAM: SLAM network, simple example, SLAM structures, SLAM output.

Simulation using GEMS: Simple model, interactive input model, defining statistics, histogram, global variables, converting the model to an input data set, Advanced GEMS features.

Text books:

1. Hugh j.Watson,John h.blackstone(jr) [1989], [II edition], *Computer simulation*, wiley publications.
2. KRV Subramanian & sundaresan [1997], *System simulation and introduction to GPSS* (CBS publications, for unit-4)

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Able to understand the computer simulation process and GPSS

DESIGN PATTERNS (DP)
(Professional Elective Common for IV B.Tech CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To provide the graduate the better understanding of object oriented design principles through design patterns.

Unit-1

Introduction: What Is a Design Pattern?, Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern.

Unit-2

A Case Study: Designing a Document Editor: Design Problems, Document Structure, Formatting, Embellishing the User Interface, Supporting Multiple Look-and-Feel Standards, Supporting Multiple Window Systems, User Operations Spelling Checking and Hyphenation, Summary.

Unit-3

Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns

Unit-4

Structural Pattern Part-I: Adapter, Bridge, and Composite.

Unit-5

Structural Pattern Part-II: Decorator, açade, Flyweight, Proxy.

Unit-6
Behavioral Patterns Part-I: Chain of Responsibility, Command, Interpreter, Iterator.

Unit-7
Behavioral Patterns Part-II: Mediator, Memento, Observer, State, Strategy

Unit-8
Behavioral Patterns Part-III: Template Method ,Visitor, Discussion of Behavioral Patterns.

TEXT BOOKS:

1. Erich Gamma [2008], *Design Patterns elements of reusable object oriented software*, Pearson Education.

REFERENCES:
1. Mark Grand ,*Pattern's in JAVA Vol-I*, Wiley DreamTech.
2. Mark Grand ,*Pattern's in JAVA Vol-II* ,Wiley DreamTech.
3. Mark Grand [2006], *JAVA Enterprise Design Patterns Vol-III*, Wiley DreamTech.
4. Eric Freeman-Oreilly-spd, *Head First Design Patterns*.
5. Alan Shalloway,*Design Patterns Explained*, Pearson Education.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Graduates are able to select the most appropriate design pattern for given scenario.

INTERNET PROTOCOLS (INP)
(Professional Elective Common for IV B.Tech CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To introduce the students the concepts of Internet administration and standards, OSI model and TCP/IP protocol suite, IP addressing, routing protocols like RIP, OSPF, BGP.

Unit - 1
Internet administration and standards, The OSI model and TCP/IP Protocol Suite

Unit-2
Underlying Technologies, IP Addressing: Classful and Classless, Subnetting and supernetting

Unit - 3
Delivery and Routing of IP packets, routing protocols (RIP, OSPF & BGP).

Unit - 4
Internet Protocol (IP), ARP & RARP

Unit-5
Internet Control Message Protocol (ICMP), Internet Group Management Protocol (IGMP).

Unit - 6
User Datagram Protocol (UDP), Transmission Control Protocol (TCP)

Unit-7
Domain Name System (DNS), Telnet & Rlogin, File Transfer Protocol (FTP), TFTP.

Unit - 8
Simple Mail Transfer Protocol (SMTP), Simple Network Management Protocol (SNMP), Hyper Text Transfer Protocol (HTTP).

Text Books:

1. Behrouz A. Forouzan [2008], [3rd Edition], *TCP/IP Protocol Suite*, Tata McGraw Hill.
2. W.Richard Stevens, G.Gabrani [2001], *TCP/IP Illustrated, The Protocols*, Pearson Education.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Graduates will be able to learn the concepts of Internet administration, OSI and TCP/IP protocol suite and analyze different routing protocols.

MIDDLEWARE TECHNOLOGIES (MWT)

(Professional Elective Common for IV B.Tech CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students learn COM, CORBA related and Customer Bridging approaches.

Unit - 1
The arrival of distributed objects: Client/Server beginnings, 2- tier, 3 -tier and N-tier Architecture, Communicating between tiers, Managing Distributed Systems.
The Dominance of COM and CORBA : The Distributed Objects Landscape, The Dominant Component Architecture(COM), The Dominant Remote Architecture(CORBA), Evolutionary Trends.

Unit - 2
Distributed Object Fundamentals : An Overview of the Fundamentals, A Distributed Object Example,**Demonstrating the Fundamentals**-Selecting Data Types,Defining Interfaces-COM IDL and Type Libraries ,CORBA IDL**,Proxies,Stubs,Skeletons**-COM Proxies and Stubs,COM Type Library Marshalling,

CORBA Stubs and Skeletons, Implementing the Servers

Unit - 3

Implementing the clients-Using IDL in COM C++ CLient, Using a Type Library in COM VB Client, Using IDL in Orbix CORBA C++ Client,VisiBroker CORBA Java Client, **Object Handles-**COM Interface Pointers in C++&VB,CORBA Object References in C++ & Java **Creating Objects**, **Invoking Object Methods, Destroying Objects-**Destroying COM Objects & CORBA Objects.

Unit - 4

COM and CORBA on the server : Accessing the Server Side ,Strategic directions of COM and CORBA-COM:A Vertical Strategy,CORBA :A Horizontal Strategy, **The Need for an Assessment strategy, Assessment Criteria-**Platform Criteria,Essential Services,Intagibles

Unit-5

Essential Services - Service Criteria, **Distributed Transaction Support**, **Distributed Security-**DCOM Secrity,MTS Security ,CORBA and the Secure Sockets Layer,CORBA Security Service,**Messaging Support-**COM and Microsoft Message Queue Server,CORBA and Messaging Support ,**Distributed Object Management-**Need for Stateless Objects,COM Object Management,CORBA Object Management

Unit - 6

COM and CORBA on the Client: The Desktop Client - Dominance of COM on the Desktop, **COM Client Approaches-**Custom Interfaces, Automation Interfaces, Dual Interfaces, Installing remote COM clients, COM **Development Environments-**The VB COM Client, VJ++ COM Client, VC++ COM Client

Unit - 7

The Internet Client, **Distributed Object Internet Strategies-**COM Internet Strategies, CORBA Internet Strategies, Using COM with ASP, Using CORBA in a Java Applet, Push Technology Alternative.

Unit - 8

Bridging COM and CORBA: Customer Bridging Approaches - Overview of Bridging Examples, Using c++ to bridge COM and CORBA. **Commercial bridging approach** - COM/CORBA Inter Working specification, A Commercial Bridging Example **Enterprise Application Servers** - Emergency of Enterprise Application Servers, Enterprise Application Server Criteria, Enterprise Application Server Approaches.

TEXT BOOK:

1. JASON PRITCHARD, PhD [2008], *COM and CORBA side by side Architectures, strategies and implementations*, Pearson education Asia.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Able to understand the IDL in COM, C++ client and enterprise application server.

MULTIMEDIA APPLICATIONS (MMA)
(Professional Elective Common for IV B.Tech CSE & IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To provide the student with the ability to understand basic computer programs in the fields of graphics, multimedia, audio and video, data compression techniques, optical storage media.

Unit-1
Introduction: - Branch overlapping aspects of Multimedia, Global Structure, Multimedia literature.
Multimedia: Media and Data Streams: - Medium, Main properties of Multimedia system, Multimedia, Traditional Data Streams Characteristics, Data Stream Characteristics for continuous media.

Unit-2
Sound/Audio: - Basic Sound Concepts, Music, Speech.

Unit-3
Images and Graphics: - Basic Concepts, Computer Image Processing.

Unit-4
Video and Animation: - Basic Concepts, Television, Computer based Animation.

Unit-5
Data Compression: - Storage Space, Coding Requirements, Source, Entropy and Hybrid Coding, Some Basic Compression Techniques, JPEG, H.26 (P*64), MPEG, DVI.

Unit-6
Optical Storage Media :- History, Basic technology, Video Disks and other WORMs, Compact Disk Digital Audio, Compact Disk Read Only Memory, CDROM Extended Architecture, Further CD- ROM based developments, Compact Disk Write Once , Compact Disk magneto Optical, Prospects of CD Technologies.

Unit-7
Computer Technology: - Communication Architecture, Multimedia Workstation.

Unit-8
Documents, Hypertext and MHEG :- Documents, Hypertext and Hypermedia, Document Architecture SGML, Document Architecture ODA, MHEG.

TEXT BOOK:

1. Ralf Steinmetz and Klara Nahrstedt [2008], *Multimedia: Computing, Communications and Applications*, Pearson Education Asia.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- An ability to know various media-editing computer applications, how they work, how they work together and how they interact with input and output hardware

IMAGE PROCESSING (IP)
(Professional Elective Common for IV B.Tech CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students learn image processing techniques, discrete fourier transforms and image restoration

Unit-1
Introduction to image processing: Representation of images, basic Image Processing System. Two dimensional Systems: Two-dimensional signals, Some Useful 2-D LSI Systems, Determining the Impulse Response from the Frequency Response. Two Dimensional Finite Impulse-Response (FIR) Filters: The Z -Transform, Two-Dimensional FIR Filters, Software Implementation of 2-D FIR Filters, Displaying Images.

Unit-2
Image Enhancement: The illumination-Reflectance Model, Homomorphic Filtering, Phase-Contrast Filtering, Histogram Modification, Median Filtering.

Unit-3
Edge Enhancement and Detection: Edge Enhancement through FIR Filters, Edge Extraction through Spatial Approaches.

Unit-4
The Discrete Fourier Transform: One- Dimensional Fourier Transform, Fast Fourier Transform Algorithms, Two-Dimensional FFT, Displaying the FFT, Two-Dimensional Filtering using the FFT, Vector-Radix FFT.

Unit-5
Properties Of Digital Images: The Whittaker-Shannon Sampling Theorem, The Sampling Theorem when applied to images, Doubling Image Resolution, Wallis Statistical Differencing Filter.

Unit-6
Design Of 2-D Fir Filters Using FFT and Window Functions: Design of FIR Filters using FFT, Window Functions, Doubling the Resolution of an Image.
Two-Dimensional Infinite Impulse Response Filters: The IIR Filters, Shank's Method, Generating the Impulse Response, Designing the IIR Filter, The Iterative Approach, Filtering Images using IIR Filters, Doubling Image Resolution using IIR Filters.

Unit-7
Image Restoration: PSFs For Different Forms of Blurs, Estimating the Extent of the Blur, The OTF, A Procedure for Restoration, Restoration through Local Operators, Restoration using similar Images.

Unit-8
Color Image Processing: Color Fundamentals, Color Images, Generating the Chromatically Diagram for 15-bit and 8-bit Color Systems, Displaying Color Images on 15 bit and 8-bit Color Systems, The Luminance Signal, Filtering Color Images, Selective Color -Tone Adjustment and Filtering.

Text Books:

1. M.A.SID-AHMED[1995], *Image Processing theory algorithms and Architectures*.

Reference:

1. Anil K.Jain [2008], *Fundamentals of Digital Image Processing, PE.*

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Able to design of 2D FIR filters and color image processing.

SOFTWARE PROJECT MANAGEMENT (SPM)

(Professional Elective Common for IV B.Tech. CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L)/week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To be able to estimate, effectively monitor progress, risk assessment of the software project under development.
- To understand how software development is integrated with other business activities and how social and environmental factors impact development.

Unit – 1

Managing Software Projects: Process and Project Management, Project management and the CMM.
Project Planning Infrastructure: The Process Database, Process Capability Baseline, Process Assets and the Body of Knowledge System.

Unit-2

Process Planning: Development Process, Requirement Change Management, Process Planning.

Unit-3

Effort Estimation and Scheduling: Estimation and Scheduling Concepts, Effort Estimation, Scheduling.

Unit-4

Quality Planning: Concepts, Quantitative Quality Management Planning, Defect Prevention Planning
Risk Management: Concepts, Risk Assessment, Risk Control.

Unit-5

Measurement and Tracking Planning: Concepts, Measurement, Project Tracking.

Unit-6

Project Management Plan: Team Management, Communication and Issue Resolution, Structure.
Configuration Management: Concepts, Process – Planning – Control – Status Monitoring and Audits.

Unit-7

Project Execution and Closure: Review Process, Data Collection, Monitoring.

Unit-8

Project Monitoring and Control: Project Tracking Milestone Analysis – Actual versus Estimated Analysis, Monitoring Quality, Risk-Related Monitoring.

Text Book:

1. Pankaj Jalote [2002], *Software Project Management in Practice*, Pearson Education

Reference Books:

1. Sommerville [2008], [7th Edition], *Software Engineering* ,Pearson education.
2. Roger S.Pressman [2005], [6th Edition], *Software Engineering, A Practitioner's Approach*, Mc GrawHill International Edition.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Able to describe and determine the purpose and importance of project management from the Perspectives of planning, tracking and completion of project.

VISUAL PROGRAMMING TECHNIQUES (VPT)
(Professional Elective Common for IV B.Tech. CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- An ability to comprehend the concepts of Object-Oriented and event-driven programming, programming problem and design a solution, code a solution to a problem, test and document program solutions.

Unit - 1

Visual Programming Environment:

Integrated Development Environment for VC++, Components of Visual C++,
Parts of VC++: Application Object, Main window Object, View Object, Document object,
Document/view architecture.

Unit - 2

Reading Keystrokes, Handling Mouse, Creating Menus, Tool bars,
Status bar, Accelerator Keys, Shortcut keys, Windows Message looping& Mapping

Unit - 3

Handling Dialogs, Model & Modeless Dialog boxes, Buttons, Check boxes
Radio Buttons, List Boxes, Combo boxes , Sliders ,

Unit-4

Serialization and File Handling

VC++ Serialization, Serialization Own Object, Writing and Reading a File.

Unit – 5

Multiple Documents and Multiple Views

Difference in MDI program, Reading Keystrokes in Multi View
Creating & using property sheets

Unit -6

Working with splitter windows, Trees

Creating Splitter Windows, Understanding Splitter windows, Differentiating Between Splitter Windows, Specifications of CSplitterWnd Class, Using Static Splitters, Creating Tree Views

Unit - 7

Active X Controls, Database connection

Boxer Active X Control, Adding Event Handler and Testing an Active X Control
Designing db program, Reaching the Current Record,

Unit -8

Internet programs using Web Browser.

Creating a web Browser, Reaching Internet with HTTP, Using FTP on the Internet.

Text books:

1. Steven Holzner [1998], *Microsoft Visual c++6*, BPB publication.
2. David j.kruglinski ,George Shepherd and Scot Window [1998], [5th Edition], *Programming Visual c++*.

Reference books:

1. Lars K Lander [2007], *Core Visual c++6*, Pearson Education.
2. Steven Holzner [2005], *Microsoft VC++5*, BPB Publications.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Able to program and code a solution to problem using object oriented and event driven programming.

CLOUD COMPUTING (CC)
(Professional Elective Common for IV B.Tech. CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To provide the students with the fundamental knowledge, understanding, and skills required for designing, building, and evolving IT systems and infrastructures to exploit cloud computing paradigm

Unit - 1
Introduction to Cloud Computing
Roots of Cloud Computing, Layers and Types of Clouds, Features of a Cloud, Cloud Infrastructure

Unit - 2
Management, Infrastructure as a Service Providers, Platform as a Service Providers, and Challenges and Opportunities.

Unit - 3
Virtualization and Resource Provisioning in Clouds
Introduction and Inspiration, Virtual Machines (VM), VM Provisioning and Manageability, VM Migration Services, VM Provisioning in the Cloud Context, and Future Research Directions.

Unit - 4
Cloud Computing Architecture
Cloud Benefits and Challenges, Market-Oriented Cloud Architecture, SLA-oriented Resource Allocation, Global Cloud Exchange; Emerging Cloud Platforms, Federation of Clouds

Unit - 5
Programming Enterprise Clouds using Aneka
Introduction, Aneka Architecture, Aneka Deployment, Parallel Programming Models, Thread Programming using Aneka.

Unit - 6
Task Programming: using Aneka, and MapReduce Programming using Aneka, Parallel Algorithms, Parallel Data mining, Parallel Mandelbrot, and Image Processing.

Unit - 7
Advanced Topics and Cloud Applications:
Integration of Private and Public Clouds, Cloud Best Practices, GrepTheWeb on Amazon Cloud, ECG

Unit - 8
Data Analysis on Cloud using Aneka, Hosting Massively Multiplayer Games on Cloud, and Content Delivery Networks Using Clouds, and Hosting Twitter and Facebook on Cloud.

Text books

1. Rajkumar Buyya, James Broberg, and Andrzej Goscinski, Cloud Computing: Principles and Paradigms, ISBN-13: 978-0470887998, Wiley Press, New York, USA, February 2011.

References:

1. Rajkumar Buyya, Chee Shin Yeo, Srikumar Venugopal, James Broberg, and Ivona Brandic, "Cloud Computing and Emerging IT Platforms: Vision, Hype, and Reality for Delivering Computing as the 5th Utility", Future Generation Computer Systems, Volume 25, Number 6, ISSN: 0167-739X, Elsevier Science, Amsterdam, The Netherlands, June 2009.
2. Suraj Pandey, William Voorsluys, Sheng Niu, Ahsan Khandoker, and Rajkumar Buyya, "An Autonomic Cloud Environment for Hosting ECG Data Analysis Services", Technical Report, CLOUDS-TR-2010-4, Cloud Computing and Distributed Systems Laboratory, The University of Melbourne, Australia, August 3, 2010.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- An ability to program enterprise clouds and to analyze data on clouds using Aneka.

INTRODUCTION TO MAINFRAME SYSTEMS (IMS)
(Professional Elective Common for IV B.Tech. CSE and IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students learn Mainframe systems, DB2 concepts and JCL.

Unit - 1

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 - 2

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 - 3

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-4

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 – 5

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

Unit -6

DB2 Objects and Data Types - DB2 Objects Hierarchy, Storage groups, Database, Table space, Table, Index, Clustered index, Synonyms and aliases, Views, Data Types, 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 - 7

COBOL Programming: COBOL program Structure, Language Fundamentals, Data division, Procedure division, File Processing, File handling verbs,

Unit -8

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:

1. Gary DeWard Brown, JCL Programming Bible (with z/OS) fifth edition, Wiley India Dream Tech, 2002.
2. COBOL - Language Reference, Ver 3, Release 2, IBM Redbook.
3. M.K. Roy and D. Ghosh Dastidar, “Cobol Programming”, Tata McGraw Hill, New York, 1973.

Reference books:

1. MVS JCL, Doug Lowe, Mike Murach and Associates
2. z/OS V1R4.0 MVS JCL Reference found online at http://www-1.ibm.com/support/docview.wss?uid=pub1sa22759706
3. z/OS V1R1.0 MVS JCL Reference found online at http://publibz.boulder.ibm.com/cgibin/bookmgr_OS390/BOOKS/iea2b600/CCONTENTS
4. Nancy Stern & Robert A Stern, “Structured Cobol Programming”, John Wiley & Sons, New York, 1973.
5. Craig S Mullins, DB2 Developer’s Guide, Sams Publishing, 1992.
6. Gabrielle Wiorkowski & David Kull, DB2 Design & Development Guide, Addison Wesley, 1992.
7. IBM Manual: DB2 Application Programming and SQL guide.
8. IBM Manual: DB2 SQL Reference.
9. DB2 Version 7 Information Center found online at http://publib.boulder.ibm.com/infocenter/db2v7luw/index.jsp

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- To develop DB2 objects and mainframe application development guidelines.

DATA MINING AND BUSINESS ANALYTICS (DMBA)
(Professional Elective Common for IV B.Tech CSE & IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To make the students learn algorithms, data mining, sensing and cluster analysis.

Unit -1
Introduction to Data mining : What is Data Mining, Integration of Data Mining system with a Database or a Data Warehouse System, Major issues in Data Mining, Applications and Trends in Data Mining.

Unit -2
Algorithms & Data mining: Mining Frequent Patterns, Associations, Basic Concepts, Efficient and Scalable Frequent Itemset Mining methods (Apriori Algoithm, improving efficiency of Apriori, Mining frequent Itemsets without Candidate generation, using vertical data formats, closed frequent itemsets).

Unit -3
Mining various kinds of association rules, from association analysis to Correlation analysis, constraint-based association mining

Unit -4
Classification and Prediction: What is classification, What is Prediction, Classification by Decision tree Induction, Bayesian classification, Rule based classification, Prediction: Linear Regression, non-linear regression

Unit -5
Cluster Analysis: Types of data in cluster analysis, classical Partitioning methods : k-Means and k-Medoids**.**

Unit -6
Introduction to Interactive Visual Data Analysis: Challenges faced by everyday data analysts, A brief history of interactive visual data analysis, Differences between statics graphics and interactive graphics.

Unit -7
Sensing and Analyzing Univariate Data: Sensing and Analyzing Univariate Data, Distribution analysis of categorical data, Distribution analysis of continuous data, Deviation Analysis, part to whole and ranking analysis, Univariate data analysis best practices

Unit -8
Sensing and Analyzing Time Series Data: Characteristics of time-series data, Visual analysis techniques for time-series data, Interactive graphics aided time-series analysis, Visual time-series analysis best practices

Text books:

1. Jiawei Han and Micheline Kamber, Data Mining: Concepts and Techniques, Second Edition, Elsevier
2. Michael Berry and Gordon Linoff, *Data Mining Techniques*, Wiley Publishing, 2004.
3. Kimball and Ross, The Data Warehouse Toolkit, Second Edition, John Wiley & Sons, 2002.

4. T. Davenport, “Competing on Analytics,” Harvard Business Review (Decision Making), January 2006.

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Able to understand the cluster analysis, visual time series analysis.

SYSTEM PROGRAMMING (SYP)
(Professional Elective for IV B.Tech IT)

Scheme : 2010 **Internal Assessment : 30**
Contact Periods: (4L) / week **End Exam Marks: 70**
Credits: 4 **End Exam Duration: 3hrs**

Course Objectives:

- To enable the students learn machine structure, evolution of OS and assemblers.

Unit-1

Background: Machine Structure, Evolution of the Components of a Programming System.

Unit-2

Evolution of OS,OS User view point : Functions, Batch Control Language, Facilities.

Unit-3

Machine Structure, Machine Language and Assembly language : General Machine Structure, Machine Language, Assembly Language

Unit-4

Assemblers : General Design Procedure, Design of Assembler, Table Processing : Searching and Sorting.

Unit-5

Macro Language and the Macro Processor: Macro Instructions, Features of a Macro Facility, Implementation.

Unit-6

Loaders: Loader Schemes, Design of an Absolute Loader, Design of a Direct Linking Loader

Unit-7

Programming Languages : Importance of High Level Languages, Features of a High Level Language, Data Types and Data Structures,

Unit-8

Storage allocation and scope of Names, Accessing Flexibility, Functional Modularity, Asynchronous Operation, Extensibility and compile Time

Textbooks:

1. John J. Donovan [2008], *Systems Programming*, Tata McGraw-Hill Edition

Reference Book:

1. D M Dhamdhere [2005], *Systems Programming and Operating Systems*, TMH Edition-2

Note: The question paper shall consist of **Eight** questions with **ONE** question from each unit. The student shall answer any **FIVE** questions.

Course Outcomes:

- Ability to develop machine language programs.