

COURSE STRUCTURE AND DETAILED SYLLABUS

for

MCA

(Applicable from the Academic Year 2010-2011)



SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(An Autonomous Institution approved by UGC and affiliated to JNTUH)
Yamnampet, Ghatkesar, R.R.District-501 301.

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**SCHEME OF INSTRUCTION FOR M.C.A (Master of Computer Applications)
EFFECTIVE FROM THE ACADEMIC YEAR 2010-2011**

SEMESTER - I

SN	Course No	Course Title	L	P	Max Marks		Credits
					Int	Ext	
1	104CA01	Mathematical Foundations of Computer Science	4	-	40	60	4
2	104CA02	Programming in C	4	-	40	60	4
3	104EC01	Computer Organization and Architecture	4	-	40	60	4
4	104MA01	Numerical and Statistical Methods	4	-	40	60	3
5	104EN01	Soft Skills-I	3	-	40	60	2
6	104MB01	Managerial Economics	4	-	40	60	3
7	104CA71	Programming Lab	-	3	40	60	2
8	104EC71	Computer Organization and ALP (8086) Lab	-	3	40	60	2
9	104CA72	IT Work Shop	-	3	40	60	2

SEMESTER- II

SN	Course No	Course Title	L	P	Max Marks		Credits
					Int	Ext	
1	104MB02	Accountancy and Financial Management	4	-	40	60	3
2	104CA03	Data Structures and Algorithms	4	-	40	60	4
3	104CA04	Operating Systems	4	-	40	60	4
4	104CA05	Database Management Systems	4	-	40	60	4
5	104EN02	Business Communication	4	-	40	60	2
6	104CA06	Management Information System	4	-	40	60	3
7	104CA73	Data Structures and Algorithm Lab	-	3	40	60	2
8	104CA74	Database Management Systems Lab	-	3	40	60	2
9	104EN71	English Lab	-	3	40	60	2

SEMESTER – III

SN	Course No	Course Title	L	P	Max Marks		credits
					Int	Ext	
1	104MA02-Logical Reasoning 104CA75-Objected Oriented Programming Lab 104CA76-Data Warehousing and Mining Lab 104CA77-Unix Programming Lab 104CA78-Technical Paper Writing and Seminar		4	-	40	60	4
2			4	-	40	60	3
3			4	-	40	60	4
4			4	-	40	60	4
5			4	-	40	60	4
6			3	-	40	60	2
7			-	3	40	60	2
8			-	3	40	60	2
9			-	3	40	60	2
10			-	3	-	50	2

SEMESTER – IV

SN	Course No	Course Title	L	P	Max Marks		Credits
					Int	Ext	
1	104CA12	Computer Graphics and Multimedia	4	-	40	60	4
2	104CA13	Object Oriented Analysis and Design	4	-	40	60	4
3	104CA14	Computer Communication and Networks	4	-	40	60	4
4		Open Elective-1	4	-	40	60	3
		104MB03-Banking Operations, Insurance and Risk Management					
		104MA03-Operations Research					
		104BT01-Human values, Ethics and Intellectual property rights					
5		Professional Elective-1	4	-	40	60	4
		104CA15-Machine Learning					
		104CA16-Compiler Design					
		104CA17-Mobile Computing					
		104MA04-Quantitative Aptitude					
6		104CA79-Computer Graphics and Multimedia Lab	3	-	40	60	2
7		104CA80-UML Lab	-	3	40	60	2
8		104CA81-Computer Communication and Networks Lab	-	3	40	60	2
9		104CA82-Seminar (Independent study and review paper)	-	3	40	60	2
10			-	3	-	50	2

SEMESTER – V

SN	Course No	Course Title	L	P	Max Marks		credits
					Int	Ext	
1	104CA18	Artificial Intelligence	4	-	40	60	4
2	104CA19	Information Security	4	-	40	60	4
3	104CA20	Web Technologies	4	-	40	60	4
4		Open Elective-II (FOREIGN LANGUAGES)	4	-	40	60	3
	104FL01-Spanish						
	104FL02-French						
	104FL03-German						
5		Professional Elective-II	4	-	40	60	4
	104CA21-Distributed Database Systems						
	104CA22-Software Project Management						
	104CA23-Human Computer Interaction						
	104EN03-Soft Skills-II						
6	104CA83-Artificial Intelligence Lab		3	-	40	60	2
7	104CA84-Web Technologies Lab		-	3	40	60	2
8	104CA85-Comprehensive Viva		-	3	40	60	2
9	104CA86-Mini Project and Seminar		-	-	-	50	2
10			-	3	-	50	2

SEMESTER – VI

SN	Course No	Course Title	L	P	Max Marks		credits
					Int	Ext.	
1	104CA87	Project Work	-	-	-	-	11

I SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x		x								x

(104CA01) MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

UNIT-I

Relations: Properties of binary Relations, equivalence, transitive closure, compatibility and partial ordering relations, Hasse diagram.

Functions: Inverse Function, Composition of functions, Lattice and its Properties.

Combinatorics: Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial and Multinomial theorems, the principles of Inclusion – Exclusion.

UNIT II:

Mathematical Logic: Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms, Quantifiers, universal quantifiers.

UNIT-III

Predicates: Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of contradiction.

Algebraic structures: Algebraic systems, Examples and general properties, Semi groups and monoids, groups, and sub groups, homomorphism, Isomorphism.

UNIT-IV

Graphs - Basic concepts - Connectedness - Isomorphism – complements – Matrix representation of graphs - Adjacency and Incidence Matrices, Planar Graphs.

UNIT-V

Trees- Spanning trees, Minimal Spanning tree Algorithms - Euler graphs – Hamiltonian directed graphs - Strongly connectedness, Chromatic Numbers.

UNIT-VI

Finite Automata – Context-Free Grammars – Chomsky’s Normal form -Griebach Normal Form - Push-down Automata - Equivalence of CFL’s and PDA’s - Non- context free languages.

Text Books

1. Discrete Mathematical Structures with applications to computer science Trembly J.P. & Manohar .P, TMH
2. Introduction to Automata theory, Languages and computation, second edition, John E Hopcroft, Rajeev Motwani, Jeffrey D.Ullman.

Reference Book:

1. “Applied Algebra for Computer Science”, 1976, PHI - Arthur Gill.
2. “Graph theory and application to Engineering and computer Science”, 1986, PHI- Narsingh Deo.

I SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x	x	x		x						x

(104CA02) PROGRAMMING IN C**UNIT – I**

History of C Language, Introduction, Character set, tokens, constants, variables and keywords, data types, Storage classes, operators, precedence of operators, Input and output operations.

UNIT – II

Decision control structures, Switch statement, Loop control structures, break and continue statements, Nested loops.

Arrays: 1-Dimensional arrays, Array initialization, 2 Dimensional arrays, Introduction to multidimensional arrays.

UNIT – III

Structures: Declaring a structure, structure initialization, array of structures, nested structures, unions.

Pointers: Declaration of Pointer variables, Initializing pointer variables, pointer expressions.

Dynamic Memory allocation: Allocating a block of memory, releasing the memory.

UNIT – IV

Functions: Function definition, types of functions, and functions with parameters and return values, parameter passing techniques passing array as argument, passing structure as argument, recursive functions, storage classes, and pointer to a function. Strings, input output functions, string handling functions.

UNIT – V

File Management: Defining and opening a file, closing a file, error handling during I/O operations - Command Line Arguments.

Preprocessor Directives: Macro substitution, File Inclusion, Compiler Control Directives.

UNIT – VI

Introduction to object oriented languages: Object oriented programming paradigm, basic concepts of Object oriented programming, benefits of OOPS, Applications of OOPS, concept of class and objects.

Text Books:

1. Programming in ANSI C: E.Balaguruswamy , 3rd edition .
2. Object oriented programming with C++ by E.Balaguruswamy, 4th edition Mc-Graw Hill Companies.

References:

1. Let us C by Yashwanth P. Kanetkar 8th edition BPB publications.
2. “The C Programming Language”, 2nd Edition, 1995, PHI. B.W. Kerninghan, D.M.Ritchie

I SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x				x						x

(104EC01) COMPUTER ORGANISATION AND ARCHITECTURE**UNIT-I**

Fundamentals of Digital Computers, Number Systems, Binary Arithmetic, Boolean Algebra, Map Simplifications, Gates -Combinational Circuits - Sequential Circuits.

Unit-II

CPU, Arithmetic and Logic Unit, 8086-Instruction Sets, Instruction cycle, Addressing Modes and formats, Instruction Pipeline, Processor organization, Register organization, Control Unit Operation, ALP using 8086.

UNIT-III

Memory: Internal Memory, External Memory, Memory Organization, Associative Memory, Virtual Memory, Cache Memory.

UNIT-IV

External Devices, I/O modules, Programmed I/O, Interrupt Driven I/O, Direct Memory Access, I/O Channels and processors, Asynchronous Data Transfer.

UNIT-V

Reduced Instruction Set Computers, Complex Instruction Set Computers, Super Scalars, Vector, Parallel Cluster, Distributed.

UNIT-VI

Embedded and Multi Core Processors.

Text Books

1. "Computer Organization and Architecture", 7th Edn. 2006, PHI.- William Stallings
2. Digital Design, 4th Edn, 2007, Pearson- M. Moris Mano and Michael D. Ciletti

REFERENCE BOOKS:

1. "Computer Architecture and Organisation", 3rd Edn., 1998, McGraw Hill - Hayes, J.P.
2. "Computer System Architecture" –3rd Edition-Pearson Education - Morris Mano -
3. "Computer Organization" – Car Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.
4. "Fundamentals or Computer Organization and Design", - Sivaraama Dandamudi Springer Int. Edition.

I SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x	x	x								x

(104MA01) NUMERICAL AND STATISTICAL METHODS**UNIT-I**

Sources and various types of errors – Chopping and Rounding in different number systems – stability of numerical algorithms- Transcendental and polynomial equation - Iterative method- Regula-Falsi method – Newton-Raphson method - Roots of polynomials.

UNIT-II

Interpolation – Polynomial interpolation - Lagrange and Newton interpolation.

Solution of system of linear algebraic equations - Gauss elimination - Gauss-Jordan method -Jacobi and Gauss-Seidel methods.

UNIT-III

Euler’s method and its modified form – Runge-Kutta method of fourth order – Predictor- Corrector methods - Milne’s method - Adams’ method.

UNIT-IV

Random variable – Discrete and Continuous – Distribution function - Probability distributions- Binomial, Poisson and Normal Distributions.

Data fitting- Method of least squares - Correlation and regression - Linear regression - Correlation coefficient - Multiple linear regression.

UNIT- V

Sampling distribution: Populations and samples - Sampling distributions of mean (known and unknown) proportions, sums and differences.

UNIT-VI

Tests of Hypothesis – Type – I and type – II errors- Hypothesis concerning means for large samples - Student t-test, F-test and Chi-Square test - Testing for Attributes .

REFERENCE BOOKS:

1. Probability and Statistics for Engineers – Walpole and Meyer.
2. Probability and Statistics for Engineers – Miller and John E. Freund, PHI Publishers.
3. Probability and Statistics for Engineers – Walpole and Meyer.
4. Advanced Engineering Mathematics - Jain and S.R.K. Iyengar, Narosa Publishing House.
5. Applied Numerical Analysis – Addison Wesley- Gerald, C.F., and Wheatley, P.O.

I SEMESTER

A	B	C	D	E	F	G	H	I	J	k
						x	x		x	x

(104EN01) SOFT SKILLS –I**UNIT-I**

Positive attitude: Meaning- Attitude and behaviour- formation and change of attitudes-examples of positive attitude- positive attitude and its results-negative attitude and its results.

UNIT-II

Art of Public speaking: Importance of public speaking- Benefits of Public speaking- Tips on public speaking

UNIT-III

Etiquette and Manners: Modern etiquette- Benefits of etiquette- classification of etiquette- Practicing good manners- Professional manners.

UNIT-IV

Forming Values: What is a value?- A core of values- values relating to self and others-Formation of values- Types of values-Power of values

UNIT-V

Time Management: Setting goals and prioritization of time; Major time management challenges.

UNIT-VI

Emotional Intelligence: What is emotional intelligence; EI at work, Teamwork and EI, Increasing EI.

TEXT BOOKS:

Prescribed: Soft Skills (know yourself & know the world), Dr. K. Alex, S. Chand

Reference:

1. Effective Business Communication, H. A. Murphy, H.W. Hilde brandt & Jane P.Thomas, 7th Edition, McGrawHill .
2. Secrets of Power Presentations, Bender, MacMillan.
3. Cool Time and the Two-Pound Bucket, Prentice, Macmillan
4. Cool Time and the Two-Pound Bucket, Prentice, Macmillan.

I SEMESTER

A	B	C	D	E	F	G	H	I	J	k
	x		x			x				

(104MB01) MANAGERIAL ECONOMICS

UNIT-I Definition, nature and scope of Managerial Economics - Managerial Economics and Micro-economics - Managerial Economics and Macro-economics - Applications of Economics in Managerial decisions making

UNIT-II Types of Business Organizations - Proprietary Firms, Partnership Firms, Joint Stock Companies, Public Sector Undertakings, Cooperative Societies, Non-profit Organizations, Business Organizations in New Millennium - Organizational Goals - Profit Maximization, Sales Maximization, Satisfying Theory - Enhancing value of the firm and its goals

UNIT-III Demand Analysis - Determinants of Market Demand - Law of Demand - Elasticity of Demand - Measurement and its use - Demand Forecasting - Techniques of Demand Forecasting

UNIT-IV Production and Costs - Meaning of Production Function - Law of variable proportions - Law of Supply and Elasticity of Supply - Costs and Cost Functions - Short Terms Costs and their use on decision making - Determinants of costs - Break Even Analysis - Cost Forecasting. Pricing and output determination - Pricing decisions under different market forms like perfect competition, monopoly, oligopoly - Pricing Methods - Pricing in Public Sector Undertakings and Cooperative Societies

UNIT-V Cost Benefit Analysis - Private vs. Public Goods - Government investment - Overall resource allocation - Steps in cost benefit analysis - Justification for the use of cost benefit analysis

UNIT-VI Government and Business - Need for Government intervention in the market - Price Controls - Support Prices and Administered Prices - Prevention and control of monopoly - Protection of consumers' interest - Economic Liberalization - Process of disinvestments - Need and methods - Policy planning as a guide to overall business development

TextBooks:

1. "Managerial Economics" - Varshney and Maheshwari

Reference Books:

1. "A study of Managerial Economics" - D.Gopalkrishna
2. "Managerial Economics", 4th Ed. - Craig Peterson

I SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x	x	x		x						x

(104CA71) PROGRAMMING LAB

- 1) Write a C program to find both the largest and smallest number in a list of integers.
- 2) Write a C program to find the sum of individual digits of a positive integer.
- 3) Write a C program to find the GCD (greatest common divisor) of two given integers.
- 4) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
- 5) Write C programs that use both recursive and non-recursive functions to find the factorial of a given integer.
- 6) Write a C program to determine if the given string is a palindrome or not.
- 7) Write a C program to find the roots of a quadratic equation.
- 8) Write a C program that uses functions to perform the following:
 - a) Addition of Two Matrices
 - b) Multiplication of Two Matrices
- 9) A Fibonacci Sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
- 10) Write a C program to count the lines, words and characters in a given text.
- 11) Write a C program that overloads the + operator and relational operators (suitable) to perform the following operations:
 - a) Concatenation of two strings.
 - b) Comparison of two strings.
- 12) Write a C program which copies one file to another.
- 13) Write a C program to reverse the first n characters in a file.
- 14) Write a C program to display the contents of a text file.
- 15) Write a C program that uses a function to convert a number to a character string.
- 16) Write a C program that uses a recursive function to find the binary equivalent of a given non-negative integer n.
- 17) Finding roots of equations: Bisection Method.
- 18) Finding roots of Equations: Newton-Raphson Method.
- 19) Finding roots of Equations: Secant Method.

- 20) Solving algebraic equations: Gauss Elimination Method.
- 21) Numerical Integration - Trapezoidal rule, Simpson's 1/3 rule, 3/8 rule.
- 22) Differential Equations - Runge-Kutta 2 order and 4th order method.
- 23) Diagrammatic and graphical representation of various statistical data and frequency distributions, Cumulative frequency curve.
- 24) Computation of various measures of location, dispersion, moments, skewness and kurtosis.
- 25) Computation of correlation coefficients - regression lines(raw data and grouped data) - correlation coefficients.

Text Books

1. Programming in C, P.Dey & M. Ghosh, Oxford Univ.Press.
2. C by Balaguruswamy.

I SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x				x						x

(104EC71) COMPUTER ORGANIZATION AND ALP (8086) LAB**List of Sample Problems/Experiments:**

Write assembly language programs for the following using MASAM.

- Write assembly language programs to evaluate the expressions:
 - $a = b + c - d * e$
 - $z = x * y + w - v + u / k$
 - Considering 8-bit, 16 bit and 32 bit binary numbers as b, c, d, e.
 - Considering 2 digit, 4digit and 8 digit BCD numbers.
Take the input in consecutive memory locations and results also.
Display the results by using "int xx" of 8086. Validate program for the boundary conditions.
- Write an ALP of 8086 to add two exponential numbers which are in IEEE 754 notation.
Display the results by using "int xx" of 8086. Validate program for the boundary conditions.
- Write an ALP of 8086 to take N numbers as input. And do the following operations on them.
 - Arrange in ascending and Descending order.
 - Find max and minimum
 - Find average
 Considering 8-bit, 16 bit binary numbers and 2 digit, 4digit and 8 digit BCD numbers.
Display the results by using "int xx" of 8086. Validate program for the Boundary conditions.
- Write an ALP of 8086 to take a string of as input (in 'C' format) and do the following Operations on it.
 - Find the length
 - Find it is Palindrome or not
 - Find whether given string substring or not.
 - Reverse a string
 - Concatenate by taking another sting
 Display the results by using "int xx" of 8086.
- Write the ALP to implement the above operations as procedures and call from the main procedure.
- Write an ALP of 8086 to find the factorial of a given number as a Procedure and call from the main program which display the result.
- Write an assembly language program to encrypt digits as shown below:

Input digit : 0 1 2 3 4 5 6 7 8 9
 Encrypted digit : 4 6 9 5 0 3 1 8 7 2

 Your program should accept a string consisting of digits. The encrypted string should be displayed using "int xx" of 8086.
- Write a procedure to locate a character in a given string. The procedure receives a pointer to a string and character to be located. When the first occurrence of the character is located, its position is returned to main. If no match is found, a negative value is returned. The main procedure requests a character string and a character to be located and displays the result.

9. Write an assembly language program to read a string of characters from the user and that prints the vowel count . Display the results by using “int xx” of 8086.

ex. Input : Advanced Programming in UNIX

Out put:

Vowel	count
a or A	3
e or E	1
i or I	3
o or O	1
u or U	1

10. A computer uses RAM chips of 1024 X 1 capacity.
- How many chips are needed, and how should their address lines be connected to provide a memory capacity of 1024 bytes?
 - How many chips are needed to provide a memory capacity of 16K bytes?
11. A computer employs RAM chips of 256X8 and ROM chips of 1024 X 8. The computer needs 2K bytes of RAM, 4K bytes of ROM, and four interface units, each with four registers. A memory-mapped I/O configuration is used. The two highest-order bits of the address bus are assigned 00 for RAM, 01 for ROM, 10 for interface registers.
- How many RAM and ROM chips are needed?
 - Draw a memory-address map for the system.
 - Give the address range in hexadecimal for RAM, ROM and interface.
12. Obtain the complement function for the match logic of one word in an associative memory. Draw the logic diagram for it and compare with the actual match logic diagram.
13. A two-way set associative cache memory uses blocks of four words. The cache can accommodate a total of 2048 words from main memory. The main memory size is 128K X 32.
- Formulate all pertinent information required to construct the cache memory.
 - What is the size of the cache memory?
14. A digital computer has a memory unit of 64K X 16 and a cache memory of 1K words.
- The cache uses direct mapping with a block size of four words.
- How many bits are there in each word of cache, and how are they divided into functions? Include a valid bit.
 - How many bits are there in the tag, index, block, and word fields of the address format?
 - How many blocks can the cache accommodate?
15. An address space is specified by 24 bits and the corresponding memory space by 16 bits.
- How many words are there in the address space?
 - How many words are there in the memory space?
 - If a page consists of 2K words, how many pages and blocks are there in the system.

16. A virtual memory has a page size of 1K words. There are eight pages and four blocks.

The associative memory page table contains the following entries. Make a list of all virtual addresses(in decimal) that will cause a page fault.

Page	Block
0	3
1	1
4	2
6	0

TEXT BOOKS:

1. IBM PC Assembly Language and Programming, P. Abel, 5th Edition, PHI/Pearson Education.
2. Introduction To Assembly Language Programming, Sivarama P.Dandamudi, Springer Int. Edition,2003.

Reference Book:

1. The 8088 and 8086 Microprocessors: Programming , Interfacing, Software, Hardware and Application,4th edition, W.A. Triebel, A.Singh, N.K. Srinath, Pearson Education.

I SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x	x			x						x

(104CA72) IT Work Shop**I. PC Hardware**

1) Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

2) Every student should disassemble and **assemble the PC back to working condition**. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

3) Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

4) Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both windows and Linux. Lab instructors should verify the installation and follow it up with a Viva

5) **Hardware Troubleshooting** : Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva

6) **Software Troubleshooting** : Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

2. Internet & World Wide Web module introduces the different ways of hooking the PC on to the internet from home and workplace and effectively usage of the internet. Usage of web browsers, email. module would enable the students in crafting professional word documents, excel spread sheets and power point presentations. **(Recommended to use Microsoft office 2007 in place of MS Office 2003)**

II. Internet & World Wide Web

1. **Orientation & Connectivity Boot Camp** : Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

2. **Search Engines & Netiquette** : Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

III. Productivity tools

1. MS Word: Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word. Give a task covering to create project certificate. Features to be covered:- Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Inserting table, using Drawing toolbar in word.

2. MS Excel : overview of toolbars, saving excel files, Using help and resources., Also give a task that is covering the features like Gridlines, Format Cells, Summation, auto fill, Formatting Text.

3. MS Power Point: Create basic power point presentation. Topic covered during this week includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in both d Power point. Students will be given model power point presentation which needs to be replicated (exactly how it's asked).

REFERENCES :

1. Comdex Information Technology course tool kit Vikas Gupta, WILEY Dreamtech
2. The Complete Computer upgrade and repair book,3rd edition Cheryl A Schmidt, WILEY Dreamtech
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
4. PC Hardware and A+Handbook – Kate J. Chase PHI (Microsoft)
5. LaTeX Companion – Leslie Lamport, PHI/Pearson.
6. IT Essentials PC Hardware and Software Companion Guide Third Edition by David Anfinson and Ken Quamme. – CISCO Press, Pearson Education.
7. IT Essentials PC Hardware and Software Labs and Study Guide Third Edition by Patrick Regan – CISCO Press, Pearson Education.
8. Troubleshooting, Maintaining and Repairing PCs, S.J. Bigelow, 5th edition, TMH.
9. Office 2007, C. Grover, M. Donald and E.A. Vander Veer, O' Reilly, SPD.
10. Step by Step 2007 Microsoft Office System, J. Cox and others (Microsoft), PHI.

II SEMESTER

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(104MB02) ACCOUNTANCY AND FINANCIAL MANAGEMENT**UNIT I**

Accounting: Principles, concepts and conventions, double entry system of accounting, Financial Accounting Vs Cost Accounting Vs Management Accounting, Types of Accounts, introduction to basic books of accounts, journal and ledger.

UNIT II

Final Accounts: Meaning and Definition of final accounts- Scope -Trail Balance – preparation of Final accounts - Trading Account, Profit & Loss Account and Balance Sheet.

UNIT III

Ratio analysis: Advantages – Scope - Limitations – types of Ratios, Fund flow analysis – meaning and Definition, importance, Preparation of Fund flow analysis and Cash flow statement

UNIT IV

Financial Management: Meaning and scope, role of Financial Manager, Objectives of time value of money – Goals of Financial Management, Leverages: Operating, Financial leverages, combined leverage, Sources of Finance, Cost of capital: Equity, Preference shares and Bonds.

UNIT V

Capital Structure Decisions & Capital Budgeting: Concept and measurement of cost of capital, Debt vs. Equity, cost of equity, preference shares, equity capital and retained earnings, weighted average cost of capital. Nature and techniques of capital budgeting: Payback method, Average rate of return and Time-Adjusted methods: IRR and NPV, Profitability index.

UNIT VI

Marginal Costing: Marginal costing and Break even analysis – concepts – cost volume profit analysis, Determination of Break even point, Margin of safety , PV Ratio analysis, Impact of changes in Cost or Selling price on BEP Practical application of Break Even Analysis, Break Even Chart.

Text Books:

1. S.N.Maheswari: Financial Management, Sultan chand Company
2. Aryasri: accounting and Financial Management, TMH, 2009
3. Van Horne, James, C: financial Management and Policy, Pearson, 2009

Reference:

1. Prasanna Chandra, Financial Management, TMH, 2009
2. S.N. Maheswari, Financial Accounting, Sultan Chand, 2009
3. Khan and Jain, Financial Management, TMH, 2009

II SEMESTER

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(104CA03) DATA STRUCTURES AND ALGORITHMS**UNIT-I**

Introduction To Algorithms And Data Structures: Notion of algorithm, pseudo code, performance analysis- time complexity and space complexity, asymptotic notation (bigoh, omega, theta), data abstraction, concept of ADT, linear and non linear data structures, sequential and linked allocation, arrays and linked lists, representation of single, two and multi dimensional arrays, sparse matrices and their representation, the list ADT-array based implementation and linked list implementation.

UNIT-II

Stacks And Queues: Stack ADT-array based implementation, linked list implementation, applications-infix to postfix conversion, postfix evaluation, implementation of recursion, Queue ADT- array based implementation, linked list implementation, circular queues, Dequeue ADT- array based implementation, linked list implementation, Priority Queues ADT- implementation, heaps.

UNIT-III

Trees And Graphs: Trees- Terminology and basic properties, tree ADT, binary tree ADT, data structures for representing binary trees-a vector based structure and linked structure, traversals of a binary tree, representing general trees with binary trees, threaded binary trees, graphs- graph ADT, basic terminology, data structures for representing graphs- edge list structures, adjacency list structures, adjacency matrix, graph traversals- DFS, BFS.

UNIT-IV

Search Trees: Binary search trees, operations- insertion, deletion and searching, AVL trees, operations- insertion and searching, B-trees, operations-insertion, deletion and searching, comparison of performance of search trees.

Searching And Sorting: Linear search, binary search, hashing-hash table, its implementation, hash functions, collision handling schemes, bubble sort, selection sort, insertion sort, quick sort, merge sort, heap sort, radix sort, comparison of searching and sorting methods.

UNIT-V

Algorithm Design methods-Greedy method-applications-Kruskal's Algorithm for Minimum cost Spanning trees, job sequencing with dead lines, single source shortest path problem, Dynamic Programming method-applications-Ordering matrix multiplications, Optimal Binary Search Trees, APSP problem.

UNIT-VI

Text Processing: Pattern matching algorithms- Brute force, the Boyer-Moore algorithm, the KMP algorithm, tries- standard tries, compressed tries, suffix tries, text compression-Huffman coding algorithm.

TEXT BOOKS:

1. "Introduction to Algorithms", Second Edition, 2001, PHI. Thomas H.Cormen, Charles E.Leiserson, Ronald L. Rivest and Clifford Stein.
2. "Fundamentals of Computer Algorithms", 2000, Galgotia- Ellis Horowitz, Sartaj Shani, and S.Rajasekaran.
3. "C and Data Structures,N.B. Venkateswarlu and Prof. E.V. Prasad

Reference Books:

1. "An introduction to Data Structures and Algorithms", J.A.Storer Springer .
2. Advanced data structures and algorithms in CPP by V.V.Muniswamy.

II SEMESTER

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(104CA04) OPERATING SYSTEMS**UNIT- I**

Operating System Introduction, Structures - Simple Batch, Multi programmed, timeshared, Personal Computer, Parallel, Distributed Systems ,Real-Time Systems , System components, Operating-System services, System Calls, Virtual Machines, System Design and Implementation.

Process and CPU Scheduling - Process concepts and scheduling, Operation on processes, Cooperating Processes, Threads, and Interposes Communication Scheduling Criteria, Scheduling Algorithm, Multiple -Processor Scheduling, Real-Time Scheduling.

UNIT-II

Memory Management and Virtual Memory - Logical versus Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging. Demand Paging , Performance of Demanding Paging , Page Replacement ,Page Replacement Algorithm, Allocation of Frames, Thrashing.

Unit -III

File System Interface and Implementation -Access methods, Directory Structure, Protection, File System Structure, Allocation methods, Free-space Management, Directory Management, Directory Implementation, Efficiency and Performance.

UNIT-IV

Process Management and Synchronization - The Critical Section Problem, Synchronization Hardware, Semaphores, and Classical Problems of Synchronization,Critical Regions, Monitors.

UNIT -V

Deadlocks - System Model, Dead locks Characterization, Methods for Handling Dead locks Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Recovery from Deadlock.

UNIT-VI

Case Study-1- UNIX - Design Principles, Programmer Interface, User Interface, Process Management, Memory Management, File System, I/O System, Inter process Communication.

Case Study-2-Windows: Design principles, System Components, Environmental Subsystems, File system, Networking, Programmer Interface.

TEXT BOOKS:

- 1 “Operating System Principles”- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
- 2 “Operating Systems” – Internals and Design Principles Stallings, Fifth Edition–2005, Pearson Education/PHI

REFERENCE BOOKS:

1. “Operating System A Design Approach”-Crowley, TMH.
2. “Modern Operating Systems”, Andrew S Tanenbaum 2nd edition Pearson/PHI
3. “Operating Systems”, Dhamdhare, TMH

II SEMESTER

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(104CA05) DATA BASE MANAGEMENT SYSTEMS**UNIT – I**

Data Abstraction – Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages - data base Administrator – Transaction Management – Entities, Attributes and Entity sets – Relationships -Conceptual Design.

Unit - II

Relational Model: Introduction to the Relational Model– Integrity constraints – relational data – Logical data base Design –Views.

Relational Algebra and Calculus: Relational Algebra – operations – Relational calculus –SQL & QBE.

UNIT – III

Null values- comparison using null values – Logical connectivity's – AND, OR and NOTR — Outer Joins –SQL Triggers and Active Data bases.

UNIT – IV

Schema refinement – Data base design – FIRST, SECOND, THIRD Normal forms – BCNF – Lossless join Decomposition – Dependency preserving Decomposition – Multi valued Dependencies – forth Normal Form and fifth normal form.

UNIT -V

Transaction Management: ACID Properties – Transactions and Schedules – Concurrent Execution of transaction – Lock Based Concurrency Control – Performance Locking – Transaction Support in SQL – Introduction to Crash recovery.

UNIT – VI

Over view of storage and Indexes - B+ Trees – Hash based indexing, extendable hashing.

Text Books:

1. “Data Base Management Systems, 3rd Edition, McGraw-Hill International Editions, 2000- Raghu Ramakrishnan & Johannes Gehrke.
2. “Data Base System Concepts”, Tata Mc-Graw Hill,2002- Silberschatz, Korth & Sudarshan.

Refernce Books

1. Introduction to DBSystems, CJ Data Pearson Education.
2. DB System Design Implementation and Management, Rot and Coronel 5th Edition, Thomson.

II SEMESTER

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(104EN02) BUSINESS COMMUNICATION**Unit –I**

Structure of the sentence- Tenses-Correction of sentences

UNIT-II

Presentation skills- Types of presentations- public speaking – paper presentations-power point presentations-Tips on powerful presentation.

UNIT - III

Types of Communication - - Effective listening, speaking, reading and writing –barriers of listening and speaking.

UNIT - IV

Informal conversation Vs Formal expression; Verbal and non-verbal communication, barriers to effective communication – kinesics.

UNIT - V

Written communication - differences between spoken and written communication -features of effective writing such ‘as clarity, brevity and appropriate tone’.

UNIT - VI

Business correspondence – business etiquette – business vocabulary-Different kinds of written communication in business organizations- E-mail writing.

REFERENCE BOOKS:

1. Contemporary Business Communication – Scot Ober
2. Basic Business Communication – Lesikar / Flatley
3. Business Strategies – (vol.s1 &2) - Monipally
4. Essentials of Business Communication, Rajendra Pal, J S KorlahaHi :Sultan Chand & Sons, New Delhi

II SEMESTER

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(104CA06) MANAGEMENT INFORMATION SYSTEM**UNIT- I**

The meaning and role of MIS: What is MIS? Decision support systems, systems approach, the systems view of business, MIS organization within the company, Managers view of Information systems.

UNIT –II

Management organizational theory and the systems approach Development of organizational theory, management and organizational behavior, management, information, and the systems approach , using Information systems for feedback.

UNIT- III

Information systems for decision making : Evolution of an information system, Basic information systems, decision making and MIS, MIS as a technique for making programmed decisions, decision assisting information systems. Communication systems basics.

Strategic and project planning for MIS: General business planning, appropriate MIS response, MIS planning-general, MIS planning-details.

UNIT-IV

Conceptual system design: Define the problems, set system objectives, establish system constraints, determine information needs, determine information sources, develop alternative conceptual designs and select one, document the system concept, prepare the conceptual design report.

UNIT-V

Detailed system design: Inform and involve the organization, aim of detailed design, project management of MIS detailed design, identify dominant and trade off criteria, define the subsystems, sketch the detailed operating subsystems and information flows, determine the degree of automation of each operation, inform and involve the organization again, inputs, outputs, and processing, early system testing, software, hardware and tools, propose an organization to operate the system, document the detailed design, revisit the manager-user.

UNIT- VI

Implementation, evaluation and maintenance of the MIS : Plan the implementation, acquire floor space and plan space layouts, organize for implementation, develop procedures for implementation, train the operating personnel, computer related acquisitions, develop forms for data collection and information dissemination, develop the files, test the system, cutover, document the system, evaluate the MIS, control and maintain the system

Pitfalls in MIS development: Fundamental weaknesses, soft spots, in planning, design problems, implementation : the TAR PIT. Applications of information systems to business. Security and ethical issues of information systems.

TEXT BOOK:

1. "Information systems for modern management", 3rd Edition by R.G Murdick, J.E Ross and J. R clagget, PHI-1994.

REFERENCE BOOK:

1. "Management information Systems", 4th edition by Robert Schultheis, Mary Sumner, PHI-1999.
2. Management Information Systems, 9/e, Laudon & Laudon, V.M.Prasad, Pearson, 2005.

II SEMESTER

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(104CA73) DATA STRUCTURES AND ALGORITHM LAB

- Write a program which reads coefficients of a polynomial into a float array and calculates the polynomial value at a given point x.
You may take the following example.
 $5x^7 + 7x^6 + 3x^2 - 6x + 1$ at $x = 1$
- Write a program which reads 'n' students marks into rows of a two dimensional integer array and calculates the average, maximum and minimum for any specified test.
You may take $n=5$
- we know
 $NCR(N,R) = NCR(N-1,R-1) + NCR(N-1,R)$
Also given that $NCR(N,0) = NCR(N,N) = 1$, Write a recursive program to calculate NCR (n,r) for any given value of n and r. Find out what happens if $r > n$
- Write a program which takes the address of an integer and reverses its value.
- Write a program which takes two complex numbers as input and outputs their sum and product.
- Write a program which takes a string along the command line and prints 'yes' if it is a palindrome and 'no' if it is not.
- Write a program which takes a two dimensional array as input and checks if it is a symmetric matrix.
- Write a program which reads n student marks in a class and then calculates the largest and second largest marks and how many students got them.
- Write a program which reads a number and prints it vertically.
Ex: input: 1789 out put 1
 7
 8
 9
- Write a program which prints all the ASCII characters.
- Let L be a list of size, say, 10. Read an integer 'n'. Reconstruct the list L, called chain, as follows.
 - If $n > 10$, make the list size n by adding NULL nodes at the end.
 - If $n < 10$, make the list size n by removing the nodes from the end.
- Overload the operator $==$ so that the expression $x == y$ returns true if the two chains x and y are equal i.e., the i_{th} elements of both chains are equal for all i. Test your code.

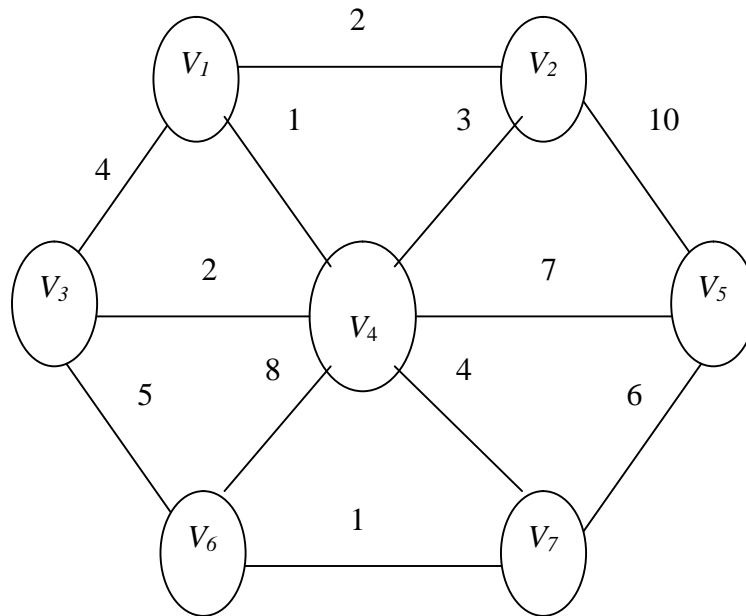
13. Develop the class doubly linked list. Objects of this class are doubly linked lists with no header node. Write functions to perform the operations
- i. Insert
 - ii. Find and
 - iii. Delete.
14. Write a function to multiply polynomials using linked list representation.
15. Convert an in-fix expression into a post-fix expression, and write a program to evaluate the post-fix expression. You may make use of the following expression:

$$A+(B-C)*D+E$$

16. A d-queue is a data structure consisting of a list of items, on which the following operations are possible.
- Push(): Insert an item in front of the queue
 - Pop () : remove the front item in the queue and return it.
 - Inject (x) : Insert item x at the rear- end of the queue.
 - Eject (x) : remove the rare item from the queue and return it.
- Write program to support the above operations and apply the above operation for the d-queue

2 4 5 8 10 12

17. Given two sorted lists L_1 and L_2 , write a procedure to compute $L_1 \cup L_2$ using the basic list operations.
18. Write a function to remove the duplicate elements in a singly linked list.
19. Write a function which checks if an infix expression has balanced Parenthesis, The function returns true if it has balanced parenthesis else returns false.
20. Construct a binary search tree with the following data: 45,25,65,15,30,55,75,10,20,50,60,80. Write a function to insert 70 and delete 15.
21. Convert the above binary search tree into an AVL tree and write a program to delete a leaf node and a node with two children.
22. Construct a minimum cost spanning tree for the graph given below using Kruskal's algorithm



23. Make a pre-order traversal of the binary search tree constructed in problem 1.
24. For the data given in problem 1 apply quick-sort algorithm
25. Write a C++ program to insert into a B-tree and delete from a B-tree.

II SEMESTER

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(104CA74) DATABASE MANAGEMENT SYSTEMS LAB

Objective: This lab enables the students to practice the concepts learnt in the subject DBMS by developing a database for an example company named “Roadway Travels” whose description is as follows. The student is expected to practice the designing, developing and querying a database in the context of example database “Roadway travel”. Students are expected to use “Mysql” database.

Roadway Travels

"Roadway Travels" is in business since 1997 with several buses connecting different places in India. Its main office is located in Hyderabad.

The company wants to computerize its operations in the following areas:

- Reservations
- Ticketing
- Cancellations

Reservations:

Reservations are directly handled by booking office. Reservations can be made 60 days in advance in either cash or credit. In case the ticket is not available, a wait listed ticket is issued to the customer. This ticket is confirmed against the cancellation.

Cancellation and Modifications:

Cancellations are also directly handed at the booking office. Cancellation charges will be charged. *Wait listed tickets that do not get confirmed are fully refunded.*

Week1: E-R Model

Analyze the problem carefully and come up with the entities in it. Identify what data has to be persisted in the database. This contains the entities, attributes etc.

Identify the primary keys for all the entities. Identify the other keys like candidate keys, partial keys, if any.

Example: **Entities:**

1. BUS
2. Ticket
3. Passenger

PRIMARY KEY ATTRIBUTES:

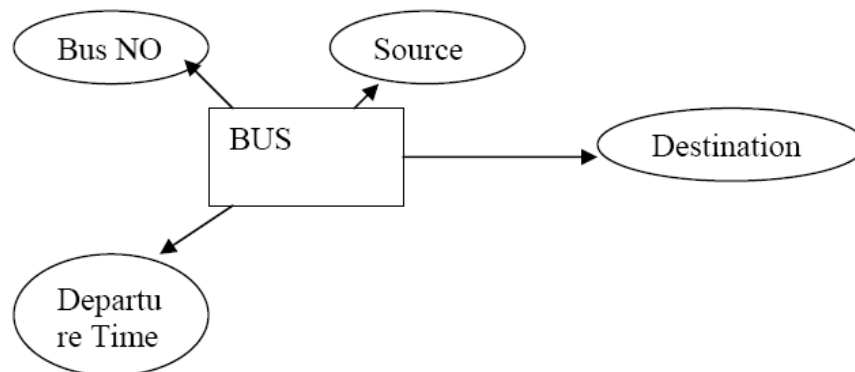
1. Ticket ID (Ticket Entity)
2. Passport ID (Passenger Entity)

Apart from the above mentioned entities you can identify more. The above mentioned are few.

Week2: Concept design with E-R Model

Relate the entities appropriately. Apply cardinalities for each relationship. Identify strong entities and weak entities (if any). Indicate the type of relationships (total / partial). Try to incorporate generalization, aggregation, specialization etc wherever required.

Example: E-r diagram for bus



Week 3 & 4: Relational Model

1. Consider the Insurance database given below. The primary keys are underlined and the data types are specified:

PERSON (driver – id #: String, name: string, address: string)

CAR (regno: string, model: string, year: int)

ACCIDENT (report-number: int, accd-date: date, location: string)

OWNS (driver-id #:string, Regno:string)

PARTICIPATED (driver-id: string, Regno:string, report-number:int, damage amount:int)

(i) Create the above tables by properly specifying the primary keys and the foreign keys.

(ii) Enter at least five tuples for each relation.

(iii) Demonstrate how you

a. Update the damage amount to 25000 for the car with a specific Regno in the ACCIDENT table with report number 12.

- b. Add a new accident to the database.
- (iv) Find the total number of people who owned cars that were involved in accidents in 2008.
 - (v) Find the number of accidents in which cars belonging to a specific model were involved.
 - (vi) Generate suitable reports.
 - (vii) Create suitable front end for querying and displaying the results.

2. Consider the following relations for an order processing database application in a company:

CUSTOMER (cust #: int , cname: string, city: string)

ORDER (order #: int, odate: date, cust #: int, ord-Amt: int)

ORDER – ITEM (order #: int, item #: int, qty: int)

ITEM (item # : int, unit price: int)

(order #: int, warehouse#: int, ship-date: date)

WAREHOUSE (warehouse #: int, city: string)

- (i) Create the above tables by properly specifying the primary keys and the foreign keys.
- (ii) Enter at least five tuples for each relation.
- (iii) Produce a listing: CUSTNAME, #oforders, AVG_ORDER_AMT, where the middle column is the total numbers of orders by the customer and the last column is the average order amount for that customer.
- (iv) List the order# for orders that were shipped from all the warehouses that the company has in a specific city.
- (v) Demonstrate the deletion of an item from the ITEM and demonstrate a method of handling the rows in the ORDER_ITEM table that contain this particular item.
- (vi) Generate suitable reports.
- (vii) Create suitable front end for querying and displaying the results.

3. Consider the following database of student enrollment in courses & books

adopted for each course:

STUDENT (regno: string, name: string, major: string, bdate:date)

COURSE (course #:int, cname:string, dept:string)

ENROLL (regno:string, course#:int, sem:int, marks:int)

BOOK _ ADOPTION (course# :int, sem:int, book-ISBN:int)

TEXT (book-ISBN:int, book-title:string, publisher:string,

author:string)

- (i) Create the above tables by properly specifying the primary keys and the foreign keys.
- (ii) Enter at least five tuples for each relation.
- (iii) Demonstrate how you add a new text book to the database and make this book be dopted by some department.
- (iv) Produce a list of text books (include Course #, Book-ISBN, Book-title) in the alphabetical order for

courses offered by the 'CS' department that use more than two books.

(v) List any department that has all its adopted books published by a specific publisher.

(vi) Generate suitable reports.

(vii) Create suitable front end for querying and displaying the results.

Represent all the entities (Strong, Weak) in tabular fashion. Represent relationships in a tabular fashion. There are different ways of representing relationships as tables based on the cardinality. Represent attributes as columns in tables or as tables based on the requirement. Different types of attributes (Composite, Multivalued, and Derived) have different way of representation.

Example: The passenger tables look as below. This is an example. You can add more attributes based on your E-R model.

Destination

Departure Time

Passenger

Name	Age	Sex	Address	Passport ID
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Week5: Normalization

Database normalization is a technique for designing relational database tables to minimize duplication of information and, in so doing, to safeguard the database against certain types of logical or structural problems, namely data anomalies. For example, when multiple instances of a given piece of information occur in a table, the possibility exists that these instances will not be kept consistent when the data within the table is updated, leading to a loss of data integrity. A table that is sufficiently normalized is less vulnerable to problems of this kind, because its structure reflects the basic assumptions for when multiple instances of the same information should be represented by a single instance only.

Week6: Practicing DML commands DML commands are used to for managing data within schema objects. Some examples: • SELECT - retrieve data from the a database • INSERT - insert data into a table • UPDATE - updates existing data within a table • DELETE - deletes all records from a table, the space for the records remain **Inserting values into Bus table:**

Inserting values into Bus table:

Few more Examples of DML commands:

Week7: Querying In this week you are going to practice queries (along with sub queries) using ANY, ALL, IN, Exists, NOT EXISTS, UNION, INTERSECT, Constraints etc.

Practice the following Queries: 1. Display unique PNR_no of all passengers. 2. Display all the names of male passengers. 3. Display the ticket numbers and names of all the passengers. 4. Display the source and destination having journey time more than 10 hours. 5. Find the ticket numbers of the passengers whose name start with 'A' and ends with 'H'. 6. Find the names of passengers whose age is between 30 and 45. 7. Display all the passengers names beginning with 'A' 8. Display the sorted list of passengers names 9. Display the Bus numbers that travel on Sunday and Wednesday 10. Display the details of passengers who are traveling either in AC or NON_AC(Using only IN operator)

Week8 and week9: Querying (continued...) You are going to practice queries using Aggregate functions (COUNT, SUM, AVG, and MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views. • Write a Query to display the Information present in the Passenger and cancellation tables. **Hint: Use UNION Operator.** • Write a Query to display different travelling options available in British Airways. • Display the number of days in a week on which the 9W01 bus is available. • Find

number of tickets booked for each PNR_no using GROUP BY CLAUSE. **Hint:** Use GROUP BY on PNR_No.

- Find the distinct PNR numbers that are present.
- Find the number of tickets booked in each class where the number of seats is greater than 1. **Hint:** Use GROUP BY, WHERE and HAVING CLAUSES.
- Find the total number of cancelled seats.
- Write a Query to count the number of tickets for the buses, which travelled after the date '14/3/2009'. **Hint:** Use HAVING CLAUSES.

Week10: Triggers In this week you are going to work on Triggers. Creation of insert trigger, delete trigger, update trigger. Practice triggers using the above database.

Week11: Procedures In this session you are going to learn Creation of stored procedure, Execution of procedure and modification of procedure. Practice procedures using the above database.

Week12: Cursors In this week you need to do the following: Declare a cursor that defines a result set. Open the cursor to establish the result set. Fetch the data into local variables as needed from the cursor, one row at a time. Close the cursor when done

Tables

BUS Bus No: Varchar: Pk Source : Varchar Destination : Varchar

Passenger PNR_No : Numeric(9) : PK Ticket_No: Numeric (9) Name: Varchar(15) Age : int (4) Sex:Char(10) : Male / Female PPNO: Varchar(15)

Reservation PNR_No: Numeric(9) : FK Journey_date : datetime(8) No_of_seats : int (8) Address : Varchar (50) Contact_No: Numeric (9) --> Should not be less than 9 and Should not accept any other character other than Integer Status: Char (2) : Yes / No

Cancellation PNR_No: Numeric(9) : FK Journey_date : datetime(8) No_of_seats : int (8) Address : Varchar (50) Contact_No: Numeric (9) --> Should not be less than 9 and Should not accept any other character other than Integer Status: Char (2) : Yes / No

Ticket Ticket_No: Numeric (9): PK Journey_date : datetime(8) Age : int (4)

Sex:Char(10) : Male / Female Source : Varchar Destination : Varchar Dep_time : Varchar

Text Books:

- 1.Introduction to SQL,Rick F.Vander Lans,Pearson education.
- 2.Oracle PL/SQL, B.Rosenzweig and E.Silvestrova,Pearson education.
- 3.Oracle PL/SQL Programming,Steven Feuerstein,SPD.
- 4.SQL & PL/SQL for Oracle 10g,Black Book,Dr.P.S.Deshpande,Dream Tech.
- 5.Oracle Database 11g PL/SQL Programming,M.Mc Laughlin,TMH.
- 6.SQL Fundamentals,J.J.Patrick,Pearson Education.

II SEMESTER

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(104CA71) ENGLISH LAB

Objectives:

The language Lab focuses computer-aided multi-media instruction and language acquisition to achieve the following targets:

To expose the students to a variety of self-instructional, learner-friendly modes of language learning.

To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required facility to face computer based competitive exams such GRE, TOEFL, GMAT etc.

To enable them to learn better pronunciation through stress on word accent, intonation, and rhythm.

To train them to use language effectively to face interviews, group discussions, public speaking.

To initiate them into greater use of the computer in resume preparation, report writing, format-making etc.

ENGLISH LANGUAGE LABORATORY PRACTICE Syllabus

The following course content is prescribed for the English Language Laboratory Practice

- Introduction to Phonetics.
- Introduction to Vowels and Consonants and associated Phonetic symbols.
- Introduction to Accent, Intonation and Rhythm.
- Situational Dialogues / Role Play.
- Public Speaking.
- Debate
- Group discussions
- Facing Interviews
- Resume preparation
- E-correspondence

Minimum Requirement

Computer aided multi media language lab with 30 systems with LAN facility.

Conventional Language Lab. with audio and video systems, speakers, headphones and a teacher console to accommodate 30 students.

Suggested Software:

Cambridge Advanced Learners' Dictionary with exercises

The Rosetta Stone English Library

Clarity Pronunciation Power

Mastering English in Vocabulary, Grammar, Spellings, Composition

Dorling Kindersley series of Grammar, Punctuation, Composition etc.

Oxford Advanced Learner's Compass, 7th Edition.

Language in Use, Foundation Books Pvt Ltd.

Learning to Speak English - 4 CDs.

Microsoft Encarta.

Murphy's English Grammar, Cambridge.

Time series of IQ Test, Brain-teasers, Aptitude Test etc.

English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge.

Text Books for English lab :

1. **Developing Communication Skills** by Krishna Mohan & Meera Benerji (Macmillan)
2. **Speaking English Effectively** by Krishna Mohan & NP Singh (Macmillan)
3. **Better English Pronunciation** by JDO Connor (UBS – Cambridge)
4. **Oxford Practice Grammar with Answers**, John Eastwood, Oxford
5. **Handbook of English Grammar and Usage**, Mark Lester and Larry Beason, Tata McGraw-Hill
6. **A text book of English Phonetics for Indian Students** by T.Balasubramanian (Macmillan)
7. **Lingua TOEFL CBT Insider**, by Dreamtech
8. **TOEFL & GRE**(KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
9. **English Skills for Technical Students**, WBSCTE with British Council, OL
10. **A Handbook of English for Competitive Examinations**, by B Shyamala Rao, Blakie Books, Chennai.

III SEMESTER

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(104CA07) OBJECTED ORIENTED PROGRAMMING**UNIT- I**

C++: Structure of a C++ program, Data types, Declaration of variables, Expressions, Operators, Operator Precedence, Evaluation of expressions, Type conversions, Pointers, Arrays, Pointers and Arrays, Strings, Structures, References. Flow control statements- if, switch, while, for, do, break, continue, goto statements.

UNIT- II

C++ Classes And Data Abstraction: Class definition, Class objects, Class scope, this pointer, Friends to a class, Static class members, Constant member functions, Constructors and Destructors, Data abstraction, ADT and information hiding.

UNIT-III

Polymorphism-Function overloading-Operator overloading-Generic programming-necessity of templates-Function templates and class templates, Inheritance, Virtual Functions and Run Time Polymorphism, Exceptional Handling.

UNIT-IV

Java: Data types, variables, operators, and expressions; flow control statements; classes, objects, class modifiers, class members and access control, methods, input and output statements, string handling

UNIT-V

Exception handling- Benefits of exception handling, throwing an exception, types of exceptions, usage of try, catch, throw, throws and finally key words, Exception objects and exception specifications, rethrowing an exception and catching exceptions, designing issues in exception handling.

UNIT-VI

Packages: creating and accessing a package, importing packages. Multi threading- thread life cycle, creating multiple threads using Thread class and Runnable interface. Java library- java.util, java.io.

TEXT BOOKS:

1. "Problem solving with C++", The OOP, 4th Edition, Walter Savitch, Pearson Education.
2. "C++, The Complete Reference", 4th Edition, Herbert Schildt, TMH.
3. "The Complete Reference Java J2SE", 5th Edition, Herbert Schildt, TMH.

REFERENCE BOOKS:

- 1." C++ Primer", 3rd Edition, S.B.Lippman and J.Lajoie, Pearson Education.
2. "The C++ Programming Language", 3rd Edition, B.Stroutstrup, Pearson Education.

III SEMESTER

A	B	C	D	E	F	G	H	I	J	k
						x		x	x	

(104CA08) E-COMMERCE**UNIT-I**

Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications. Consumer Oriented Electronic commerce - Mercantile Process models

UNIT-II

Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems.

UNIT-III

Inter Organizational Commerce - EDI, EDI Implementation, Value added networks. Intra Organizational Commerce - work Flow, Automation Customization and internal Commerce, Supply chain Management.

UNIT-IV

Corporate Digital Library - Document Library, digital Document types, corporate Data Warehouses. Advertising and Marketing - Information based marketing, Advertising on Internet, on-line marketing process, market research.

UNIT-V

Consumer Search and Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering.

UNIT- VI

Multimedia - key multimedia concepts, Digital Video and electronic Commerce, Desktop video processings, Desktop video conferencing.

TEXT BOOKS:

1. Frontiers of electronic commerce – Kalakata, Whinston, Pearson.

REFERENCE BOOKS:

1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.
2. E-Commerce, S.Jaiswal – Galgotia.
3. E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang.
4. Electronic Commerce – Gary P.Schneider – Thomson.
5. E-Commerce – Business, Technology, Society, Kenneth C.Taudon, Carol Guyerico Traver.

III SEMESTER

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(104CA09) DATA WAREHOUSING AND MINING**UNIT-I**

Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Major issues in Data Mining, Data Warehouse and OLAP Technology for Data Mining Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, Further Development of Data Cube Technology, From Data Warehousing to Data Mining.

Data Preprocessing: Needs Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation, Online Data Storage.

UNIT-II

Data Mining Primitives, Languages, and System Architectures: Data Mining Primitives, Data Mining Query Languages, Designing Graphical User Interfaces Based on a Data Mining Query Language Architectures of Data Mining Systems.

Concepts Description: Characterization and Comparison: Data Generalization and Summarization-Based Characterization, Analytical Characterization: Analysis of Attribute Relevance, Mining Class Comparisons: Discriminating between Different Classes, Mining Descriptive Statistical Measures in Large Databases.

UNIT-III

Mining Association Rules in Large Databases: Association Rule Mining, Mining Single-Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, From Association Mining to Correlation Analysis, Constraint-Based Association Mining.

UNIT-IV

Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods, Prediction, Classifier Accuracy.

UNIT-V

Cluster Analysis Introduction :Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis.

UNIT-VI

Mining Complex Types of Data: Multidimensional Analysis and Descriptive Mining of Complex, Data Objects, Mining Spatial Databases, Mining Multimedia Databases, Mining Time-Series and Sequence Data, Mining Text Databases, Mining the World Wide Web.

TEXT BOOKS:

1. “Data Mining – Concepts and Techniques “- JIAWEI HAN & MICHELINE KAMBER Harcourt India.
2. “Data Mining Techniques” – ARUN K PUJARI, University Press
3. “Building the Data Warehouse”- W. H. Inmon, Wiley Dreamtech India Pvt. Ltd.

REFERENCE BOOKS:

1. Data Warehousing in the Real World – SAM ANAHORY & DENNIS MURRAY.
Pearson Edn Asia.
2. Data Warehousing Fundamentals – PAULRAJ PONNAIAH WILEY STUDENT EDITION
3. The Data Warehouse Life cycle Tool kit – RALPH KIMBALL WILEY STUDENT EDITION
4. Data Mining Introductory and advanced topics –MARGARET H DUNHAM,
PEARSON EDUCATION

III SEMESTER

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		x		x					x	x

(104CA10) UNIX PROGRAMMING**UNIT-I**

Unix Utilities-Introduction to Unix file system, vi editor, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, cp, mv, ln, rm, unlink, mkdir, rmdir, du, df, mount, umount, find, unmask, ulimit, ps, who, w, finger, arp, ftp, telnet, rlogin, text processing utilities and backup utilities, detailed commands to be covered are cat, tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, tar, cpio.

UNIT-II

Problem solving approaches in Unix: Using single commands, using compound Commands, shell scripts, C programs, building own command library of programs.

Working with the Bourne shell: what is a shell, shell responsibilities, pipes and input Redirection, output redirection, here documents, the shell as a programming language, shell meta characters, shell variables, shell commands, the environment, control structures, shell script examples.

UNIT-III

Unix Files: Unix file structure, directories, files and devices, System calls, library functions, low level file access, usage of open, creat, read, write, close, lseek, stat, fstat, octl, umask, dup, dup2. The standard I/O (fopen, fclose, fflush, fseek, fgetc, getc, getchar, fputc, putc, putchar, fgets, gets), formatted I/O, stream errors, streams and file descriptors, file and directory maintenance (chmod, chown, unlink, link, symlink, mkdir, rmdir, chdir, getcwd), Directory handling system calls (opendir, readdir, closedir,rewinddir, seekdir, telldir)

UNIT-IV

Unix Process and Signals: What is process, process structure, starting new process, waiting for a process, zombie process, process control, process identifiers, **system call interface for process management**-fork, vfork, exit, wait, waitpid, exec, system, **Signals**- Signal functions, unreliable signals, interrupted system calls, kill and raise functions, alarm, pause functions, abort, sleep functions.

UNIT-V

Interprocess Communication Overview: Introduction to IPC,IPC between processes on a single computer system, IPC between processes on different systems, file and record locking, other unix locking techniques, pipes, FIFOs, streams and messages, namespaces, introduction to three types of IPC(system-V)-message queues, semaphores and shared memory.

Message Queues-Unix system-V messages, unix kernel support for messages, unix APIs for messages, client/server example.

UNIT-VI

Semaphores-Unix system-V semaphores, unix kernel support for semaphores, unix APIs for semaphores, file locking with semaphores.

Shared Memory-Unix system-V shared memory, unix kernel support for shared memory, unix APIs for shared memory, semaphore and shared memory example.

Sockets: Berkeley sockets, socket system calls for connection oriented protocol and connectionless protocol, example-client/server program.

TEXT BOOKS:

1. Unix Network Programming, W.R.Stevens Pearson/PHI.
2. Unix Concepts and Applications, 3rd Edition, Sumitabha Das, TMH.
3. Advanced Unix Programming, 2nd Edition, M.J.Rochkind, Pearson Education.

REFERENCE BOOKS:

1. Unix system programming using C++, T.Chan, PHI.
2. Unix for programmers and users, 3rd Edition, Graham Glass, King Ables, Pearson Education.
3. Unix System-V Network Programming, Stephen A.Rago, Pearson Education.
4. Unix programming environment, Kernighan and Pike, PHI. / Pearson Education

III SEMESTER

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(104CA11) SOFTWARE ENGINEERING**UNIT-I:**

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, Software myths.

A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Process models: The waterfall model, Incremental process models, Evolutionary process models, The Unified process.

UNIT-II

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

System models: Context Models, Behavioral models, Data models, Object models, structured methods.

UNIT-III:

Design Engineering: Design process and Design quality, Design concepts, the design model.

Creating an architectural design: software architecture, Data design, Architectural styles and patterns, Architectural Design.

UNIT-IV:

Object-Oriented Design: Objects and object classes, An Object-Oriented design process, Design evolution.

Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT-V:

Product metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

Metrics for Process and Products: Software Measurement, Metrics for software quality.

Risk management: Reactive vs Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

UNIT-VI:

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

Quality Management: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

TEXT BOOKS:

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition. McGrawHill International Edition.
2. Software Engineering- Sommerville, 7th edition, Pearson education.

REFERENCE BOOKS:

1. Software Engineering- K.K. Agarwal & Yogesh Singh, New Age International Publishers
2. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiely.
3. Systems Analysis and Design- Shely Cashman Rosenblatt, Thomson Publications.
4. Software Engineering principles and practice- Waman S Jawadekar, The McGraw- Hill Companies.

III SEMESTER

A	B	C	D	E	F	G	H	I	J	k
							x			x

(104MA02) LOGICAL REASONING**Unit – I**

Series Completion: Number Series, Alphabet Series, Alpha – Numeric Series.

Number, Ranking & Time Sequence Test – Arithmetical Reasoning – Mathematical Operations

Unit – II

Analogy: Completing the Analogous Pair, Simple Analogy, Choosing the Analogous pair, Double Analogy, Word Analogy and Number Analogy.

Unit – III

Classification / Odd One Out: Word Classification , Number Classification , Letter Classification . Clocks & Calendar.

Unit – IV

Assertions and Reason – Logical Venn Diagrams – Alpha Numeric Sequence Puzzle.

Cubes and Dice – Analytical Reasoning

Unit – V

Blood Relations: Deciphering Jumbled up Descriptions, Relation Puzzle – Direction sense Test.

Data Sufficiency: Problems in which a question on any topic such as Coding – Decoding,

Blood Relations , Directions ,Arithmetical Reasoning etc

Unit – VI

Puzzle Test: Classification Type Questions, Seating Arrangements Comparison Type Questions , Sequential Order of Things ,Selection Based on given conditions, Family – Based Puzzles ,Jumbled Problems.

Reference Book : Verbal and Non Verbal Reasoning by R.S.Agarwal.

III SEMESTER

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(104CA75) OBJECTED ORIENTED PROGRAMMING LAB

1. Write C++ programs that use both recursive and non-recursive functions

To find the factorial of a given integer.

To find the GCD of two given integers.

To find the nth Fibonacci number.

2. Implement the complex number ADT in C++ using a class. The complex ADT is used to represent complex numbers of the form $c=a+ib$, where a and b are real numbers.

The operations supported by this ADT are:

- | | |
|---------------------------------|---------------------------------------|
| a) Reading a complex number. | d) Subtraction of complex numbers. |
| b) Writing a complex number. | e) Multiplication of complex numbers. |
| c) Addition of Complex numbers. | f) Division of complex numbers. |

Note:

1. overload << and >> operators in part a and part b.

2. overload +, -, *, / operators in parts c, d, e and f.

3. Write C++ programs that illustrate how the following forms of inheritance are supported:

- Single inheritance
- Multiple inheritance
- Multi level inheritance
- Hierarchical inheritance

4. Write a C++ program that illustrates the order of execution of constructors and destructors when new class is derived from more than one base class.

5. Write a C++ program that illustrates how runs time polymorphism is achieved using virtual functions.

6. Write a Java program for creating multiple threads

- Using Thread class
- Using Runnable interface

7. Write a Java program that illustrates how run time polymorphism is achieved.

8. Write a java program that illustrates the following

- Creation of simple package.
- Accessing a package.
- Implementing interfaces.

9. Write a java program that illustrates the following

- Handling predefined exceptions
- Handling user defined exceptions

III SEMESTER

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(104CA76) DATA WAREHOUSING AND MINING LAB**Data Warehousing and Data Mining:**

Task 1: Credit Risk Assessment

Description:

The business of banks is making loans. Assessing the credit worthiness of an applicant is of crucial importance. You have to develop a system to help a loan officer decide whether the credit of a customer is good, or bad. A bank's business rules regarding loans must consider two opposing factors. On the one hand, a bank wants to make as many loans as possible. Interest on these loans is the banks profit source. On the other hand, a bank cannot afford to make too many bad loans. Too many bad loans could lead to the collapse of the bank. The bank's loan policy must involve a compromise: not too strict, and not too lenient.

To do the assignment, you first and foremost need some knowledge about the world of credit. You can acquire such knowledge in a number of ways. 1. Knowledge Engineering. Find a loan officer who is willing to talk. Interview her and try to represent her knowledge in the form of production rules. 2. Books. Find some training manuals for loan officers or perhaps a suitable textbook on finance. Translate this knowledge from text form to production rule form. 3. Common sense. Imagine yourself as a loan officer and make up reasonable rules which can be used to judge the credit worthiness of a loan applicant. 4. Case histories. Find records of actual cases where competent loan officers correctly judged when, and when not to, approve a loan application.

The German Credit Data: Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such dataset, consisting of 1000 actual cases collected in Germany. credit dataset (original) Excel spreadsheet version of the German credit data. In spite of the fact that the data is German, you should probably make use of it for this assignment. (Unless you really can consult a real loan officer !)

A few notes on the German dataset • DM stands for Deutsche Mark, the unit of currency, worth about 90 cents Canadian (but looks and acts like a quarter). • owns_telephone. German phone rates are much higher than in Canada so fewer people own telephones. • foreign_worker. There are millions of these in Germany (many from Turrkey). It is very hard to get German citizenship if you were not born of German parents. • There are 20 attributes used in judging a loan applicant. The goal is the classify the applicant into one of two categories, good or bad.

Subtasks : (Turn in your answers to the following tasks)

1. List all the categorical (or nominal) attributes and the real-valued attributes separately. (5 marks)
2. What attributes do you think might be crucial in making the credit assessment? Come up with some simple rules in plain English using your selected attributes. (5 marks)
3. One type of model that you can create is a Decision Tree - train a Decision Tree using the complete dataset as the training data. Report the model obtained after training. (10 marks)
4. Suppose you use your above model trained on the complete dataset, and classify credit good/bad for each of the examples in the dataset. What % of examples can you classify correctly? (This is also called testing on the training set) Why do you think you cannot get 100 % training accuracy? (10 marks)
5. Is testing on the training set as you did above a good idea? Why or Why not? (10 marks)
6. One approach for solving the problem encountered in the previous question is using cross-validation? Describe what is cross-validation briefly. Train a Decision Tree again using cross-validation and report your results. Does your accuracy increase/decrease? Why? (10 marks)
7. Check to see if the data shows a bias against "foreign workers" (attribute 20), or "personal-status" (attribute 9). One way to do this (perhaps rather simple minded) is to remove these attributes from the dataset and see if the decision tree created in those cases is significantly different from the full dataset case which you have already done. To remove an attribute you can use the preprocess tab in Weka's GUI Explorer. Did removing these attributes have any significant effect? Discuss. (10 marks)
8. Another question might be, do you really need to input so many attributes to get good results? Maybe only a few would do. For example, you could try just having attributes 2, 3, 5, 7, 10, 17 (and 21, the class attribute (naturally)). Try out some combinations. (You had removed two attributes in problem 7. Remember to reload the arff data file to get all the attributes initially before you start selecting the ones you want.) (10 marks)
9. Sometimes, the cost of rejecting an applicant who actually has a good credit (case 1) might be higher than accepting an applicant who has bad credit (case 2). Instead of counting the misclassifications equally in both cases, give a higher cost to the first case (say cost 5) and lower cost to the second case. You can do this by using a cost matrix in Weka. Train your Decision Tree again and report the Decision Tree and cross-validation results. Are they significantly different from results obtained in problem 6 (using equal cost)? (10 marks)
10. Do you think it is a good idea to prefer simple decision trees instead of having long complex decision trees? How does the complexity of a Decision Tree relate to the bias of the model? (10 marks)
11. You can make your Decision Trees simpler by pruning the nodes. One approach is to use Reduced Error Pruning - Explain this idea briefly. Try reduced error pruning for training your Decision Trees using cross-validation (you can do this in Weka) and report the Decision Tree you obtain? Also, report your accuracy using the pruned model. Does your accuracy increase? (10 marks)
12. (Extra Credit): How can you convert a Decision Trees into "if-then-else rules". Make up your own small Decision Tree consisting of 2-3 levels and convert it into a set of rules. There also exist different classifiers that output the model in the form of rules - one such classifier in Weka is rules.PART, train this model and report the set of rules obtained. Sometimes just one attribute can be good enough in making the decision, yes, just one! Can you predict what attribute that might be in this dataset? OneR classifier uses a single attribute to make decisions (it chooses the attribute based on minimum error). Report the rule obtained by training a one R classifier. Rank the performance of j48, PART and oneR. (10 marks)

Task Resources:

- Mentor lecture on Decision Trees
- Andrew Moore's Data Mining Tutorials (See tutorials on Decision Trees and Cross Validation)
- Decision Trees (Source: Tan, MSU)
- Tom Mitchell's book slides (See slides on Concept Learning and Decision Trees)
- Weka resources:
 - o Introduction to Weka (html version) (download ppt version)
 - o Download Weka
 - o Weka Tutorial
 - o ARFF format
 - o Using Weka from command line

Task 2: Hospital Management System

Data Warehouse consists Dimension Table and Fact Table.**REMEMBER The following**

Dimension

The dimension object (Dimension):

- _ Name
- _ Attributes (Levels) , with one primary key
- _ Hierarchies

One time dimension is must.

About Levels and Hierarchies

Dimension objects (dimension) consist of a set of levels and a set of hierarchies defined over those levels. The levels represent levels of aggregation. Hierarchies describe parent-child relationships among a set of levels.

For example, a typical calendar dimension could contain five levels. Two hierarchies can be defined on these levels:

H1: YearL > QuarterL > MonthL > WeekL > DayL
 H2: YearL > WeekL > DayL

The hierarchies are described from parent to child, so that Year is the parent of Quarter, Quarter the parent of Month, and so forth.

About Unique Key Constraints

When you create a definition for a hierarchy, Warehouse Builder creates an identifier key for each level of the hierarchy and a unique key constraint on the lowest level (Base Level)

Design a Hospital Management system data warehouse (TARGET) consists of Dimensions Patient, Medicine, Supplier, Time. Where measures are ' NO UNITS', UNIT PRICE.

Assume the Relational database (SOURCE) table schemas as follows

TIME (day, month, year),

PATIENT (patient_name, Age, Address, etc.,)

MEDICINE (Medicine_Brand_name, Drug_name, Supplier, no_units, Uinit_Price, etc.,)

SUPPLIER :(Supplier_name, Medicine_Brand_name, Address, etc.,)

If each Dimension has 6 levels, decide the levels and hierarchies, Assume the level names suitably.

Design the Hospital Management system data warehouse using all schemas. Give the example 4-D cube with assumption names.

III SEMESTER

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(104CA77) UNIX PROGRAMMING LAB

1. Write a shell script to generate a multiplication table.
2. Write a shell script that copies multiple files to a directory.
3. Write a shell script that counts the number of lines and words present in a given file.
4. Write a shell script that displays the list of all files in the given directory.
5. Write a shell script (small calculator) that adds, subtracts, multiplies and divides the given two integers. There are two division options: one returns the quotient and the other returns remainder. The script requires 3 arguments: The operation to be used and two integer numbers. The options are add (-a), subtract (-s), multiply (-m), quotient (-c) and remainder (-r).
6. Write a shell script to reverse the rows and columns of a matrix.
7. Write a C program that counts the number of blanks in a text file.
Using standard I/O
Using system calls.
8. Implement in C the following Unix commands using system calls.
 - a) cat
 - b) ls
 - c) mv
9. Write a program that takes one or more file/directory names as command line input and reports the following information on the file:
 - a) File type.
 - b) Number of links.
 - c) Time of last access.
 - d) Read, Write and Execute permissions.
10. Write a C program that illustrates uses of the mkdir, opendir, readdir, closedir, and rmdir APIs.
11. Write a C program that illustrates how to execute two commands concurrently with a command pipe.
12. Write a C program that illustrates the following:
 - a) Two-way communication with unidirectional pipes.
 - b) Two-way communication with bidirectional pipes
13. Write a C program that illustrates the creation of child process using fork system call.

14. Write a C program that displays the real time of a day every 60 seconds.
15. Write a C program that illustrates file-locking using semaphores.
16. Write a C program that implements a producer-consumer system with two processes. (Using semaphores)
17. Write a C program that illustrates inter process communication using shared memory system calls.
18. Write a C program that illustrates the following.
 - a) Creating a message queue.
 - a) Writing to a message queue.
 - b) Reading from a message queue.
19. Write a C program to develop simple client and server application using sockets (system calls).

Text Books :

1. **Advanced Unix Programming**, N.B.Venkateswarulu, BS Publications.
2. **Unix and Shell programming**, B.A.Forouzan and R.F.Gilberg, Thomson.

III SEMESTER

A	B	C	D	E	F	G	H	I	J	k
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(104CA78) TECHNICAL PAPER WRITING AND SEMINAR

There shall be a Technical Seminar to be taken up by the students in III Semester in the area of their chosen specialization. The Technical Seminar shall be evaluated on a continuous basis as follows for a maximum of 50 marks:

Evaluation by the Supervisor	10 Marks
Final Report	10 Marks
Presentation	30 Marks

IV SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x	x							x		

(104CA12) COMPUTER GRAPHICS AND MULTIMEDIA**UNIT-I**

Graphics: Display Devices – Interactive Input devices – Graphics – Bresenham's Line Drawing Algorithm-DDA Algorithm – Comparison of Line Drawing Algorithms – Circle Drawing Algorithm.

UNIT-II

Two-dimensional Transformations – Scan Conversion Algorithms – Windowing – Clipping – Segmenting – Viewport Transformations.

UNIT-III

Three-dimensional Transformations – Hidden Surface Elimination Algorithms.

UNIT-IV

Visible surface detection methods : Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods

UNIT-V

Multimedia: Multimedia Architecture – Multimedia File formats – Compression – Image Compression – Video Compression – Audio Compression.

UNIT-VI

DVI Technology – Video & Audio Codecs – Virtual Reality – GUI Design - Playback – Hypermedia Linking and Embedding.

Text Books

1. Donald Hearn, M. Pauline Baker, "Computer Graphics", 1992, PHI.
2. Fred T. Hofstterm, "Multimedia Literacy", 1995, McGraw Hill.

Reference Book:

1. Foley J. D., Van Dam A., Feiner S. K., & Hughes J. F., Computer Graphics Principles and Practice, Second Edition, Addison Wesley
2. Ralf Steinmetz & Klara Nahrstedt, Multimedia: Computing, Communications and Applications, Pearson Education

IV SEMESTER

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(104CA13) OBJECT ORIENTED ANALYSIS AND DESIGN (Using UML)**UNIT-I**

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle.

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.

Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

UNIT-II

Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams.

Basic Behavioral Modeling-I: Interactions, Interaction diagrams.

UNIT-III

Basic Behavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams.

UNIT-IV

Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

UNIT-V

Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams.

UNIT-VI

Case Study: The Unified Library application

TEXT BOOKS:

1. Grady Booch, James Rumbaugh, Ivar Jacobson : The Unified Modeling Language User Guide, Pearson Education.
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.

REFERENCE BOOKS:

1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.
2. Pascal Roques: Modeling Software Systems Using UML2, WILEY-Dreamtech India Pvt. Ltd.
3. Atul Kahate: Object Oriented Analysis & Design, The McGraw-Hill Companies.
4. Mark Priestley: Practical Object-Oriented Design with UML, TATA McGrawHill
5. Applying UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education.

IV SEMESTER

A	B	C	D	E	F	G	H	I	J	k
	x		x							x

(104CA14) COMPUTER COMMUNICATION AND NETWORKS**UNIT-I**

Introduction to Networks, internet, protocols and standards, the OSI model, layers in OSI model, TCP/IP suite, Addressing, Analog and digital signals.

Physical Layer: Analog and Digital, Periodic Analog Signals, Digital Signals, Transmission Impairment, Data Rate Limits.

UNIT-II

Data Link Layer: Design Issues, Error detection and correction , Elementary Data Link Protocols, Sliding Window Protocols, Protocol Verification, Example Data Link protocols.

The Medium Access Sub Layer : The channel allocation problem, Multiple access Protocols, Ethernet , Wireless LANs , Broadband Wireless, Bluetooth ,Data Link Layer Switching.

UNIT-III

The Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms ,Quality Of Service, Internet Working ,Network Layer in Internet.

UNIT-IV

The Transport Protocol: The Transport Service, Elements of transport protocol, A simple Transport Protocol, Internet Transport Protocols UDP, Internet Transport Protocols TCP, Performance Issues.

UNIT-V

The Application Layer: DNS-(Domain Name System), Electronic Mail, World Wide Web Multimedia,

UNIT-VI

Network Security: Cryptography , Symmetric _key Algorithms, Public–Key Algorithms, Digital Signatures, Management of public keys.

Communication Security, Authentications Protocols, E-mail Security, Web security, Social Issues.

TEXT BOOKS:

1. Computer Networks -- Andrew S Tanenbaum,4th Edition. Pearson Education/PHI
- 2.Data Communications and Networking –Behrouz A ForouzanThe McGraw – Hill.

REFERENCE BOOKS:

1. Computer Communications and Networking Technologies –Michael A.Gallo, William M .Hancock - Thomson Publication.
2. Data Communications and Networking – Behrouz A. Forouzan. Third Edition TMH.

IV SEMESTER**OPEN ELECTIVE-1**

A	B	C	D	E	F	G	H	I	J	k
			x	x						x

(104MB03) BANKING OPERATIONS, INSURANCE AND RISK MANAGEMENT**UNIT – I: INTRODUCTION TO BANKING BUSINESS:**

Banking Sectors- Retail, Corporate, Rural, and International; Non-banking financial intermediaries; Types of advances and deposits in a bank, New Dimensions and Products. - Credit, Debit and Smart Cards, and e-Banking Structure of the Indian Banking System's. Commercial Banks – Public and Private Sector and Foreign Banks. Cooperative Banks.

UNIT – II: BANKING REFORMS AND REGULATION:

Banking Regulation Act, 1949, Reserve Bank of India Act 1934, and Reserve Bank's Instruments of Credit Control. Deficiencies in Indian Banking including Problems Accounts and Non-Performing Assets, Banking Sector Reforms.

UNIT – III: INSURANCE:

Need for and importance of insurance, branches of insurance (life and general insurance) policy and procedure.

UNIT – IV: INSURANCE BUSINESS ENVIRONMENT:

Mathematical basis of life insurance, reinsurance coverage, regulatory and legal frame work governing the insurance, business and economics of insurance, need for changing mindset; Latest trends.

Unit -V: INTRODUCTION TO RISK –

Types of Risks facing Business and Individuals, Risk Management Process, Risk Management Methods, Risk Identification and Measurement, Risk Management Techniques: Non Insurance Methods.

Unit -VI: INSURANCE AS A RISK MANAGEMENT

Techniques Principles: Principle of Indemnity, Principle of Insurable Interest, Principle of Subrogation, Principle of utmost good Faith, Requisites of Insurable Risks, Requirements of an Insurance Contract, Distinguishes Characteristics of Insurance Contracts, Role of Agents and Brokers.

TEXT BOOKS

1. Varshney, P.N., Banking Law and Practice, Sultan Chand & Sons, New Delhi.
2. General principles of Insurance - Harding and Evanly
3. Mark S.Dorfman: Risk Management and Insurance, Pearson, 2009.

REFERENCES:

- Scott E. Harringam Gregory R. Nichaus: Risk Management & Insurance, , TMH, 2009.
- George E. Rejda: Principles of risk Management & Insurance, , 9/e, Pearson Education, 2009.
- G.Koteshwar: Risk Management Insurance and Derivatives, Himalaya, 2008
- Gulati: Principles of Insurance Management, Excel, 2009
- James S Trieschmann, Robert E. Hoyt & David N. Sommer: Risk Management & Insurance, Cengage, 2009.
- Dorfman: Introduction to Risk Management and Insurance, 8/e,Pearson, 2009.
- P.K.Gupta: Insurance and Risk Management, Himalaya ,2009.
- Vivek & P.N. Asthana: Financial Risk Management, Himalaya,2009

IV SEMESTER**OPEN ELECTIVE-1**

A	B	C	D	E	F	G	H	I	J	k
x	x									

(104MA03) OPERATIONS RESEARCH**UNIT – I**

Introduction to operations research; Basics definition, scope, objectives, phases, models and limitations of Operations Research. Linear programming problem. Formulation of LPP, Graphical solution of Lpp. Simplex method. Artificial variables, big- method, two-phases method, degeneracy and unbound solutions.

UNIT – II

Transportation Problem. Formulation , solution, unbalanced Transportation problem. Finding basic feasible solutions- northwest corner rule, least cost method and Vogel's approximation method. Optimality test, the stepping stone method and MODI method. Assignment model. Formulation. Hungarian method optimal solution. Solving unbalanced problem. Traveling salesman problem as assignment problem.

UNIT-III

Sequencing models. Solution of sequencing problem-processing n jobs through 2 machines-processing n jobs through 3 machines- Processing 2 jobs through m machines-Processing n jobs through m machines. Replacement models. Replacement of items that Deteriorate whose maintenance costs increase with time without change in the money value. Replacement of items that fail suddenly, individual replacement policy, group replacement policy.

UNIT IV

Dynamic Programming. Characteristics of dynamic programming. Dynamic programming approach for Priority Management employment smoothening, capital budgeting, stage coach/shortest path, cargo loading and reliability problems.

UNIT-V

Games theory – Competitive games, rectangular game, saddle point- Minimax (maximin) method of optimal strategies, value of the game, solution of games with saddle points, dominance principle. Rectangular games without saddle point- mixed strategy for 2 X 2 games.

UNIT-VI

Inventory models, Inventory costs. Models with deterministic demand- model (a) demand rate uniform and production rate infinite, model (b) demand rate non-uniform and production rate infinite, model (c) demand rate uniform and production rate finite.

TEXT BOOKS:

1. "Operations research", Pearson Education, 2005, A.M.Natarajan, P.Balasubramani, A. Tamilarasi.
2. "Operations research", Tata McGraw-Hill, 2008, P.Sankara Iyer.

REFERENCE BOOKS:

1. "Operations research", R.Panneerselvam, PHI-2e, 2006,rp2008.
2. "Operations research", N.V.S.Raju, HI-TECH, 2002

IV SEMESTER**OPEN ELECTIVE-1**

A	B	C	D	E	F	G	H	I	J	k
				x						

(104BT01) HUMAN VALUES, ETHICS AND IPR**A: INDIAN CULTURE- ANCIENT WISDOM:****Unit -I**

Purpose of Education – Indian Perspective, Civilization and Culture, Wisdom of selflessness and sacrifice, ancient wisdom on good governance and Happy life, bunch of thoughts and contribution of ancient to modern sages/ monks on Indian culture, need for interfaith understanding, cultural unity of India, what sages, seers said about knowledge devotion, meditation and happiness in life.

UNIT- II

What is modernity, relevance of yogic and spiritual practices for intellect-mind-body harmony. Science and religion, concentration and meditation, peace of mind, Hinduism in view of Mahatma Gandhi, Role of expanse of Technology in Third Millennium. Indian literature and cultural identity, Teacher- Student relationship. Need for balance and harmonious growth in all stages of life. Development into holistic professional.

B: HUMAN VALUES AND VALUE EDUCATION**UNIT-III**

Human Values – Rules of Behaviour, Distinguishing and Defining ‘Human’ Values

Truth Love and Caring, Peace, Responsibility, Justice, Human Values Applied in Practice, Values and Psychic Health, The Hierarchy of Human Values, Values of Nature, The Values of Personhood (Personality), **Values of the Person**, The Value of Truth, The Value of the Good, The Value of Beauty, Moral Values, The Value of Happiness, The need for Human Value, **Value Education**, Need of Value Education, Basic Guidelines for Value Education, Content of Value Education, Process of Value Education.

C: HUMAN VALUES AND ETHICS**UNIT- IV**

Morals, Ethics, Concept of Values, Characteristics of Values, Types of Values, Principles of values, Core Values.

Ethics, Morality, Law, Characteristics of an Ethical Person, Professional Ethics, Professional Responsibility, Codes of Practice, Things to Do, Things to Not Do, Ethical Behaviour, Marketing Ethics, Specific Issues in Marketing Ethics, Special Ethical Issues in Marketing to Children, Unfair or Deceptive Marketing Practices, The use of Ethics as a Marketing Tactic, General Guidelines of Marketing, Ethics in Finance Professional, Ethical Violations, Ethical Codes for Financial Professionals, Ethics in Computer Profession, Some Questions in Computer Ethics, Ethical Standards, Ethics in Engineering, Current Codes of Ethics, General Principles, Ethical Issues, Ethics, General Business Ethics, Theoretical Issues in Business Ethics, Business Ethics, Religious Views on Business Ethics, Importance of Ethics in Business, Ethics in Advertising, Work Ethics, Criticisms of Work Ethic Concept, Working with Ethics.

D: INTELLECTUAL PROPERTY RIGHTS (IPR)**UNIT- V**

Invention and Creativity, Basic Types of Property, Need for Protection of IPR, IP Types – Industrial Property (Patents, Trade Marks, Trade Secrets, Industrial Designs and Integrated Circuits), Copyrights and Related Rights, Geographical Indications.

UNIT-VI

WIPO Mission and Activities, GATT & Trips. Patent search, Patent drafting. National and International conventions, Patent Cooperation Treaty (PCT), Case Studies on IP .

Text Books

1. I.V. Chalapati Rao “Ancient Wisdom, Modern Insights” - Sri Yabaluri Raghavaiah Memorial Trust
2. Smriti Srivastava “Human Values and Professional Ethics” – S.K. Kataria & Sons.
3. Anitha Rao R & Bhanoji Rao “Intellectual Property Rights- A Primer”, Eastern Book Company, 2008.

References:

1. Govindarajan M, Natarajan S, Senthil Kumar V.S, “Engineering Ethics”, Prentice Hall of India, New Delhi, 2004.
2. Charles D. Fleddermann, “Engineering Ethics”, Pearson Education/Prentice Hall, New Jersey, 2004(Indian Print)

IV SEMESTER**PROFESSIONAL ELECTIVE-1**

A	B	C	D	E	F	G	H	I	J	k
	x		x	x						x

(104CA15) MACHINE LEARNING**UNIT – I**

Introduction- Learning Input-Output Functions- Learning Requires Bias, Boolean Functions- Representation-Classes of Boolean Functions- CNF Functions.

UNIT-II

Neural Networks- Threshold Logic Units- Linear Machines- Networks of TLUs-Variations on Backprop, Statistical Learning- using Statistical Decision Theory- Learning Belief Networks.

UNIT-III

Decision Trees-Definitions-Supervised learning of Univariate Decision Trees- Networks Equivalent to Decision Trees – Overfitting and Evaluation- The problem of Replicated Subtrees- The problem of Missing Attributes- Comparisons.

UNIT-IV

Inductive Logic programming- Notation and definitions- A Generic ILP Algorithm- Inducing Recursive Programs-Choosing Literals to Add- Relationships Between ILP and Decision Tree Induction. Computational learning Theory- Notation and Assumptions for PAC Learning Theory- PAC Learning- The Vapnik-Chervonenkis Dimension- VC Dimension and PAC Learning.

UNIT-V

Unsupervised learning- Clustering Methods- Hierarchical Clustering methods, temporal-difference Learning- Temporal Patterns and prediction Problems- Supervised and Temporal- Difference Methods- Incremental Computation of the $(\nabla W)_i$ - An Experiment with TD methods.

UNIT-VI

Delayed-Reinforcement learning- The General problem- Temporal Discounting and optimal policies- Q-Learning- Discussion, Limitations and Extensions of Q-Learning, Explanation-Based learning- deductive learning- Domain Theories- Evaluable Predicates.

Text book:

1.” Introduction To Machine Learning”,Nils J_ Nilsson, Robotics Laboratory

Reference book:

1.”Machine Learning and Data mining: Introduction to principles and algorithms, Igor Kononenko, Matjaz kumar

IV SEMESTER**PROFESSIONAL ELECTIVE-1**

A	B	C	D	E	F	G	H	I	J	k
x		x								x

(104CA16) COMPILER DESIGN**UNIT-I**

INTRODUCTION :Compilers-Grammars-Languages-Phases of compiler-compiler writing tools-Errors-
Lexical phase errors, syntactic phase errors, semantic phase errors

UNIT-II

LEXICAL ANALYZER :Role of lexical analyzer-input Buffering –Specification and Recognition of
tokens –Language for specifying

UNIT –III

Lexical analyzer-Finite Automata-Regular expression to NFA-Optimization of DFA based pattern
matches –Design of a Lexical Analyzer Generator

UNIT-IV

SYNTAX ANALYZER :Parsers-CFG-derivations and parse trees-capabilities of CFG- Top own parsing-
Bottom Up parsing – LR parsing- SLR parsing -LALR parsing – CLR parsing – Operator Precedence –
Predictive Parsing.

UNIT-V

INTERMEDIATE CODE GENERATION : Syntax Directed Translation scheme-Implementation of
Syntax Directed Translators-Intermediate code postfix notation, parse trees and syntax trees-Trees three
address code –Quadruples, Triples –Translation of
Assignment statements –Boolean expressions-Declaration –Flow control statements –Back patching.

UNIT-VI

CODE OPTIMIZATION : Principal source of optimization-Issues in the design of a code generator-Run-
Time storage management – Basic blocks and flow graphs Next use information-Simple code generator –
DAG representation of basic blocks-Peephole optimization – Code Generation

TEXT BOOKS:

1. A.V.Aho, Ravi Sethi,J. D.ullman, Compilers –principles ,Techniques and tools, Addison Wesley publishing company,1988.
2. Allen I.Holub, compiler Design in C, Prentice Hall of India, 1993.

REFERENCES:

1. Kenneth C. Loudon, Compiler Construction: Principles & Practice, Thomson Learning 2003
2. Muchnick, Advanced Compiler Design: Implementation, Academic Press.
3. Rajini Jindal , Compilers Construction & Design , Umesh Publications , Delhi.2002
Ronald Mak ,Writing Compilers and Interpreters, 2nd Edition , John Miler & Sons , 1996 .

IV SEMESTER**PROFESSIONAL ELECTIVE-1**

A	B	C	D	E	F	G	H	I	J	k
x	x									x

(104CA17) MOBILE COMPUTING**UNIT – I**

Introduction to Network Technologies and Cellular Communications: HIPERLAN: Protocol architecture, physical layer, Channel access control sub-layer, MAC sub-layer, Information bases and networking

WLAN: Infrared vs. radio transmission, Infrastructure and ad hoc networks, IEEE 802.11. Bluetooth.: User scenarios, Physical layer, MAC layer, Networking, Security, Link management

GSM: Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

Mobile Computing (MC): Introduction to MC, novel applications, limitations, and architecture

UNIT –II

(Wireless) Medium Access Control: Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA.

UNIT –III

Mobile Network Layer: Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunneling and encapsulation, optimizations), Dynamic Host Configuration Protocol (DHCP).

UNIT – IV

Mobile Transport Layer:Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

UNIT – V

Mobile Ad hoc Networks (MANETs): Overview, Properties of a MANET, spectrum of MANET applications, routing and various routing algorithms, security in MANETs.

UNIT – VI

Protocols and Tools: Wireless Application Protocol-WAP. (Introduction, protocol architecture, and treatment of protocols of all layers), Bluetooth (User scenarios, physical layer, MAC layer, networking, security, link management) and J2ME.

TEXT BOOKS:

- 1). **Jochen Schiller**, “Mobile Communications”, *Addison-Wesley*. second edition, 2004.
- 2) **Stojmenovic and Cacute**, “Handbook of Wireless Networks and Mobile Computing”, *Wiley*, 2002, ISBN 0471419028.

REFERENCE BOOKS:

- 1) Reza Behravanfar, “Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML”, ISBN: 0521817331, Cambridge University Press, October 2004,

IV SEMESTER

A	B	C	D	E	F	G	H	I	J	k
			x				x		x	x

(104MA04) QUANTITATIVE APTITUDE**Unit I**

Number System : Test for Divisibility , Test of prime number , Division and Remainder – HCF and LCM of Numbers - Fractions .

Unit II

Average: Average of different groups , Replacement of some of the items - Percentage - Profit and Loss.

Unit III

Ratio and Proportion: Properties of Ratio , Comparison of Ratios ,Useful Simple Results on Proportion – Partnership and Share – Mixtures.

Unit IV

Simple Interest: Effect of change of P, R and T on Simple Interest - Compound Interest : Conversion Period , Difference between Compound Interest and Simple Interest – Time and Work – Time and Distance .

Unit V

Mensuration : Area of Plane Figures ,Volume and Surface Area of Solid Figures .

Unit VI

Data Interpretation : Tabulation , Bar Graphs , Pie Charts , Line Graphs.

Reference Books :

- 1.Quantitative Aptitude by R.S.Agarwal
- 2.Quantitative Aptitude by Abhijit Guha

IV SEMESTER

A	B	C	D	E	F	G	H	I	J	k
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(104CA79) COMPUTER GRAPHICS AND MULTIMEDIA LAB

1. Basic shapes rasterisation.
2. Scan conversion of polygons
3. Polygon, Pattern filling
4. Understanding 2D transformation
5. Realizing various Projections
6. Representing curves and surfaces
7. Realizing parametric cubic curves and bicubic surfaces
8. Visible Surfaces Determination
9. Realization of illumination and shading

I. Design the Following in Flash:

1. Write a program using Action script 2.0 for display of an album
2. Draw a design for the following applications and indicate the steps
 - i. Open the pages in the book
 - ii. Masking Operations
3. Create rain effect. (Using nesting and motion tweening).
4. Draw a design for the following applications and indicate the steps
 - i. Separate the upper layer contents from lower layer by using Mask.
 - ii. Draw a line using pencil
5. Create an interactive application to change the opacity and dimensions of an image. Also, create a button when clicked explodes the image and the pieces slowly fall down to the bottom of the stage.
6. Draw a design for the following applications and write the steps
7. Create a customised cursor.
8. Drive a car over a rough terrain.

IV SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x	x	x		x	x					x

(104CA80) UML LAB

1. The student should take up the case study of Unified Library application which is mentioned in the theory, and Model it in different views i.e. Use case view, logical view, component view, Deployment view, Database design, forward and Reverse Engineering, and Generation of documentation of the project.
2. Student has to take up another case study of his/her own interest and do the same what ever mentioned in first problem. Some of the ideas regarding case studies are given in reference books, which were mentioned in theory syllabus, can be referred for some idea.

IV SEMESTER

A	B	C	D	E	F	G	H	I	J	k
		x		x						x

(104CA81) COMPUTER COMMUNICATIONS AND NETWORKS LAB

1. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP .
3. Implement Dijkstra 's algorithm to compute the Shortest path in a graph.
4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm
5. Take an example subnet of hosts . Obtain broadcast tree for it.
6. Take a 64 bit playing text and encrypt the same using DES algorithm.
7. Write a program to break the above DES coding
8. Using RSA algorithm Encrypt a text data and Decrypt the same

IV SEMESTER

A	B	C	D	E	F	G	H	I	J	k
					x		x			

(104CA82) SEMINAR (INDEPENDENT STUDY AND REVIEW PAPER)

There shall be a Technical Seminar to be taken up by the students in IV Semester in the area of their chosen specialization. The Technical Seminar shall be evaluated on a continuous basis as follows for a maximum of 50 marks:

Evaluation by the Supervisor	10 Marks
Final Report	10 Marks
Presentation	30 Marks

V SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x	x	x								x

(104CA18) ARTIFICIAL INTELLIGENCE**UNIT-I**

Problem formulation, Problem Definition – Production systems, Control strategies, Search strategies. Problem characteristics, Production system characteristics – Specialized production systems.

UNIT-II

Problem solving methods – Problem graphs, Matching, Indexing and Heuristic functions–Measure of performance and analysis of search algorithms - Game playing.

UNIT-III

Knowledge representation, Knowledge representation using Predicate logic, Introduction to predicate calculus, Resolution, Use of predicate calculus, Knowledge representation using other logic.

UNIT-IV

Structured representation of knowledge - Basic plan generation systems – Strips – Advanced plan generation systems – K strips – D Comp. Expert systems – Architecture - Roles – Knowledge Acquisition – Meta knowledge, Heuristics - Knowledge representation – Production based system, Frame based system.

UNIT-V

Inference – Backward chaining, Forward chaining, Rule value approach.

UNIT-VI

Fuzzy reasoning –Certainty factors, Bayesian probability - Strategic explanations – Why, Why not and how explanations. Learning – Machine learning, adaptive learning - Typical expert systems.

TEXT BOOKS:

1. Elaine Rich, "Artificial Intelligence", 1985, McGraw Hill.

Reference Books:

1. Nilsson N.J., "Principles of Artificial Intelligence", 1992, Narosa

V SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x		x								x

(104CA19) INFORMATION SECURITY**UNIT-I**

Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs, Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.

UNIT-II

Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC.

UNIT-III

Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service

UNIT-IV

Email privacy: Pretty Good Privacy (PGP) and S/MIME.

UNIT-V

IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET)

UNIT-VI

Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3, Intruders, Viruses and related threats
Firewall Design principles, Trusted Systems, Intrusion Detection Systems

TEXT BOOKS:

1. "Network Security Essentials" (Applications and Standards) by William Stallings Pearson Education.
2. "Hack Proofing your network by Ryan Russell", Dan Kaminsky, Rain Forest Puppy, Joe Grand, David Ahmad, Hal Flynn Ido Dubrawsky, Steve W.Manzuik and Ryan Permech, wiley Dreamtech,

REFERENCE BOOKS:

1. Fundamentals of Network Security by Eric Maiwald (Dreamtech press)
2. Network Security - Private Communication in a Public World by Charlie Kaufman, Radia Perlman and Mike Speciner, Pearson/PHI.
3. Principles of Information Security, Whitman, Thomson.
4. Cryptography and network Security, Third edition, Stallings, PHI/Pearson

V SEMESTER

A	B	C	D	E	F	G	H	I	J	k
		x	x	x					x	

(104CA20) WEB TECHNOLOGIES**UNIT-I**

Introduction to Client Server Architecture/Computing — Various Components of Internet and Web — Web Related Protocols.

UNIT-II

HTML — List, Table, Frame, Form Tags with their usage — Creation and Design of Static and Dynamic Web Pages — Web Design characteristics.

UNIT-III

CGI: Background — Working Features — Simple Applications — JavaScript: Basics, Statements, Objects, Methods, Properties — Event Handling — Integrating JavaScript with various elements of HTML — Cookies – JARS – Applications – Overview of Perl.

UNIT-IV

XML: Comparison with HTML — DTD — XML Elements — Content Creation — Attributes — Entities — XSL — XLINK — XPATH — XPOINTER — Namespaces — Applications — integrating XML with other applications.

UNIT-V

Introduction to ASP: Objects — Components; JSP : Objects — Components; PHP – Database Management — Java Beans as Components - Applications.

UNIT-VI

Middleware Technologies: CORBA, COM, DCOM — Ecommerce: Introduction, Types —Architectures — Applications — Security.

Text Books

1. Shelly Powers et al. "Dynamic Web Publishing", Techmedia, 1998.
2. Chris Bates, "Web Programming – Building Internet Application", 2nd Edition, Wiley-Dreamtech India Pvt. Ltd.,2002.

Reference Books:

1. Programming workd wide web-seberts pearson
2. Java server programming, Ivan Beyross and others, the xTerm SPD.

V SEMESTER**OPEN ELECTIVE-2**

A	B	C	D	E	F	G	H	I	J	k
										x

(104FL01) SPANISH**Aims and Objectives of the Course**

- i) To develop the following skills: Listening, speaking, reading & writing.
Learners should be able to
 - (a) listen and comprehend elementary structures of the spoken language.
 - (b) participate in simple conversations in different situations of every day life.
 - (c) read and understand simple texts.
 - (d) write sentences and short paragraphs on general topics and situations.
- ii) To develop creative aspect in language learning i.e. the ability to work out different patterns and combinations with the help of basic grammatical structures and lexical items.
- iii) To introduce the learners to aspects of life and culture of Spanish and Latin American people.

Course Contents

Modules	Functional Aspects	Grammatical Aspects
Unit - I	Greetings, introductions, identifying others ; tools to ask meaning, pronunciation and spellings ; different nationalities and their languages; Hispanic names, family relations and professions; days of the week, months.	Basic structure of spelling and pronunciation; present indicative of the regular verbs ('ar'/er/ir,) and 'querer'; subject pronouns; interrogative sentences with 'Por qué', and 'quién'; causal phrase with 'porque'; 'ser' and 'estar'; negative sentences; adjectives of nationality.
Unit - II	Ordinal and cardinal numbers; quantities; to go shopping, identifying material, color, size etc; to go to a restaurant, food habits of Spanish and Latin American people.	Gender and number of nouns and adjectives; the verb 'tener'; interrogative sentences; demonstrative and qualitative adjectives.
Unit - III	To express opinions on something, contradict someone in a modest ways, suggest something, to value things aesthetically and intellectually;	Qualitative adjectives, forms and usage, gradations, superlative adjectives, exclamatory sentences; the verb 'gustar', forms and syntax; personal pronouns; definite and indefinite pronouns, direct object pronouns; prepositions; verbs like 'parecer' and 'encontrar', their form and syntax, interrogative pronouns.
Unit - IV	expression of likes and dislikes; expression and reaction to certain things, (agreement or disagreement).	
Unit - V	Expression of time; accepting and rejecting invitations; Spanish and Latin American time tables and	Present indicative of irregular verbs, expressions with 'tener' estar prepositional pronouns; interrogative sentences.
Unit - VI	Comparison of Latin American time table with Indian time tables; how to fix an appointment; climate, weather of the day.	

Techniques of Instruction

Without prejudice to the specific language teaching approach adopted by the teacher, the following parameters are suggested for realising the above objectives and contents:

1. To avoid monotony in the classroom and to reduce the role of mechanical reproduction of the material learnt, stress should be laid on creativity in the classroom.
2. Use of modern technical aids, such as slide projectors, tape recorders, computers, CD-ROMs etc. should be encouraged.
3. Supplementary teaching material on cultural aspects, such as art, films etc. may be used in the classroom. An intercultural approach should be encouraged.
4. Methods/techniques should be employed, which would encourage the learners to do independent work by way of reading writing and self-correction.

Books recommended:

1. ELE INICIAL 1
2. Planeta @ E/LE (1). Matilde Cerrolaza, Oscar Cerrolaza, Begoña Llovel.

Edelsa, Madrid 1999.

Entre Nosotros A. Sánchez, M. Ríos, J.A. Metalla. SGEL, Madrid, 1897

V SEMESTEROPEN ELECTIVE-2

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(104FL02) FRENCH
UN PRINTEMPS A PARIS

UNIT - I

VOCABULAIRE : Professions et nationalités, vie quotidienne et loisirs, descriptions physiques et psychologiques, nombres cardinaux.

UNIT - II

GRAMMAIRE : Articles définis et indéfinis, genre et nombre des noms et des adjectifs, interrogation et négation, conjugaison du présent.
PHONÉTIQUE : Intonation, liaison, voyelles orales et nasales.

UNIT - III

COMMUNICATION : Faire connaissance, inviter et répondre a une invitation, décrire les personnes.
CIVILISATION : Paris, monuments et lieux publics. La vie de quatre parisiens de professions différentes.

AVENTURE EN BOURGOGNE**UNIT -IV**

VOCABULAIRE : Logement et nourriture, vêtements et couleurs, fêtes et faits divers, nombres ordinaux.
GRAMMAIRE : Articles partitifs, adjectifs démonstratifs et possessifs, prépositions et adverbes de quantité et de lieu, pronoms toniques, l'impératif, verbes pronominaux.

UNIT - V

PHONÉTIQUE : Intonation, semi-voyelles, liaison, consonnes sonores et sourdes.
COMMUNICATION : Exprimer l'ordre et l'obligation, demander et commander, évaluer et apprécier, féliciter et remercier.

UNIT - VI

CIVILISATION : Une région de France: la Bourgogne, vie quotidienne à la campagne.

LE NOUVEAU SANS FRONTIÈRES -I (Text Book and Exercise Book published by CLÉ INTERNATIONAL- Philippe Dominique et al.)

V SEMESTER**OPEN ELECTIVE-2**

A	B	C	D	E	F	G	H	I	J	k
										x

(104FL03) GERMAN

- Phonetics, culture and civilization components are built into the lessons in the prescribed book. :
- Communicative skills and conversational practice in situational contexts are developed and practiced with the topics dealt with in the lessons.
- Practice will be given in translation of simple texts from German to English and vice versa. :

UNIT - I

- Conjugation of Verbs in present tense ~ Imperative sentences ~ Yes-No Questions
- Position of Verb in a sentence
- Indefinite article and the definite article
- Possessive pronouns
- Cardinal Numbers
- Telling the Time

UNIT - II

- Past tense of the Verbs *sein* and *haben*
- Accusative case using the definite, indefinite articles and personal pronouns
- Indirect questions
- Verbs with separable and inseparable prefixes .
- Modal verbs "
- Future tense

UNIT - III

- Subordinate clauses: Conditional sentences with *wenn*; Causal sentences with *weil* and *denn*
- Dative case using the definite, indefinite articles and personal pronouns
- Reflexive pronouns
- Word building

UNIT - IV

- Prepositions with the accusative case
- Prepositions with the dative case
- Present perfect tense
- Prepositions with the accusative or the dative cases

UNIT - V

- Predicates and attributive adjectives; declension of adjectives; degrees of comparison
- Past tense of more complicated verbs
- The subjunctive in German .

UNIT – VI

- Indirect questions with *Daß*; *daß*-sentences ""
- The passive voice
- Relative sentences and relative pronouns
- The infinitive construction with *zu*
- *Vocabulary*

Text Book:

1. Braun, K., Nieder, L., Schmoie, F. Deutsch als Fremdsprache IA. Ernst Klett Verlag. Stuttgart.
Lessons 11 to 20

V SEMESTER**PROFESSIONAL ELECTIVE-2**

A	B	C	D	E	F	G	H	I	J	k
		x	x							x

(104CA21) DISTRIBUTED DATABASE SYSTEMS**UNIT – I**

Features of Distributed versus Centralized Databases, Principles Of Distributed Databases, Levels Of Distribution Transparency, Reference Architecture for Distributed Databases , Types of Data Fragmentation, Integrity Constraints in Distributed Databases.

UNIT – II

Translation of Global Queries to Fragment Queries, Equivalence Transformations for Queries, Transforming Global Queries into Fragment Queries, Distributed Grouping and Aggregate Function Evaluation, Parametric Queries. Optimization of Access Strategies, A Framework for Query Optimization, Join Queries, General Queries.

UNIT – III

The Management of Distributed Transactions, A Framework for Transaction, Management , Supporting Atomicity of Distributed Transactions, Concurrency Control for Distributed Transactions, Architectural Aspects of Distributed Transactions. Concurrency Control, Foundation of Distributed Concurrency Control, Distributed Deadlocks, Concurrency Control based on Timestamps, Optimistic Methods for Distributed Concurrency Control.

UNIT – IV

Reliability, Basic Concepts, Nonblocking Commitment Protocols, Reliability and concurrency Control, Determining a Consistent View of the Network, Detection and Resolution of Inconsistency, Checkpoints and Cold Restart, Distributed Database Administration, Catalog Management in Distributed Databases, Authorization and Protection

UNIT – V

Architectural Issues, Alternative Client/Server Architectures, Cache Consistency Object Management, Object Identifier Management, Pointer Swizzling, Object Migration, Distributed Object Storage, Object Query Processing, Object Query Processor Architectures, Query Processing Issues, Query Execution , Transaction Management, Transaction Management in Object DBMSs , Transactions as Objects.

UNIT

–

VI

Database Integration, Scheme Translation, Scheme Integration, Query Processing Query Processing Layers in Distributed Multi-DBMSs, Query Optimization Issues. Transaction Management Transaction and Computation Model Multidatabase Concurrency Control, Multidatabase Recovery, Object Orientation And Interoperability Object Management Architecture CORBA and Database Interoperability Distributed Component Model COM/OLE and Database Interoperability, PUSH-Based Technologies

TEXT BOOKS :

1. Distributed Database Principles & Systems, Stefano Ceri, Giuseppe Pelagatti McGraw-Hill

REFERENCES:

1. Principles of Distributed Database Systems, M.Tamer Ozsu, Patrick Valduriez – Pearson Education.

V SEMESTER**PROFESSIONAL ELECTIVE-2**

A	B	C	D	E	F	G	H	I	J	k
	x		x		x	x				

(104CA22) SOFTWARE PROJECT MANAGEMENT**UNIT-I**

Conventional Software Management: The waterfall model, conventional software Management performance.

Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

UNIT-II

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.

The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

UNIT-III

Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases.

Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

UNIT-IV

Model based software architectures: A Management perspective and technical perspective.

Work Flows of the process: Software process workflows, Iteration workflows, Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments.

Iterative Process Planning: work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

UNIT-V

Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building blocks, The Project Environment.

Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

Tailoring the Process: Process discriminates.

UNIT-VI

Future Software Project Management: modern Project Profiles, Next generation Software economics, modern process transitions.

Case Study: The command Center Processing and Display system- Replacement (CCPDS-R)

TEXT BOOKS:

1. Software Project Management, Walker Royce: Pearson Education, 2005.

REFERENCE BOOKS:

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw- Hill Edition.

2. Software Project Management, Joel Henry, Pearson Education.

3. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005.

V SEMESTER**PROFESSIONAL ELECTIVE-2**

A	B	C	D	E	F	G	H	I	J	k
	x		x		x			x		

(104CA23) HUMAN COMPUTER INTERACTION**UNIT-I**

Introduction: Importance of user Interface – Definition, importance of good design. Benefits of good design. A brief history of Screen design.

UNIT-II

The graphical user interface – Popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics- Principles of user interface.

UNIT-III

Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, and understanding business junctions.

UNIT-IV

Screen Designing:- Design goals – Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation information simply and meaningfully – information retrieval on web – statistical graphics – Technological consideration in interface design.

UNIT-V

Windows – New and Navigation schemes selection of window, selection of devices based and screen based controls.Components – text and messages, Icons and increases – Multimedia, colors, uses problems, choosing colors.

UNIT-VI

Software tools – Specification methods, interface – Building Tools. Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

TEXT BOOKS:

1. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamTech.
Designing the user interface. 3rd Edition Ben Shneidermann , Pearson Education
Asia

REFERENCE BOOKS:

1. Human – Computer Interaction. Alan Dix, Janet Fincay, Gre Goryd, Abowd, Russell
Bealg, Pearson Education

V SEMESTER

A	B	C	D	E	F	G	H	I	J	k
							x		x	x

(104EN03) SOFT SKILLS-II**UNIT-I**

SWOT analysis: Importance of knowing yourself-process of knowing yourself-Benefits of SWOT analysis-Using SWOT analysis-SWOT analysis grid

UNIT-II

Stress management: Effects of stress-Kinds of stress-Sources of stress-Signs of stress- Tips on Stress management.

UNIT-III

Career management: General Management Skills, Financial Management, Sales and Marketing Management, Human Resource Management

UNIT-IV

Team Building and Teamwork: Aspects of team building-skills needed for teamwork-model of team building- characteristics of effective team-Role of team leader and team members.

UNIT-V

Resume Writing: The purpose of resume-Types of resume-Do's & Don'ts in Resume writing-Cover letter.

UNIT-VI

Interview Skills: Formal and informal interviews; telephonic interviews.

TEXT BOOKS:

Prescribed: Soft Skills (know yourself & know the world), Dr. K. Alex, S. Chand

Reference:

1. KnockOut interviews answers, Ken Langdon , Wikki Cart Wright, Pearson Education
2. Transformational Leadership, Srivastava, McMillan.
3. Managing Corporate Culture, Ulrich, McMillan.

V SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x	x			x						x

(104CA83) ARTIFICIAL INTELLIGENCE LAB

1. Write a program to solve Traveling Salesman problem. The heuristic function used, number of nodes generated, depth of the search at each stages should be given in the form of a table.
2. Write a program to solve 8 puzzle problem with different heuristics
3. Implement the alpha – beta search procedures. Use it to play the game tic-tac-toe. At the end of the game your program should give the number of nodes generated, cut-off values at each stages in the form of a table
4. Write an ATN interpreter. Minimize the amount of information that must be stored at each node to allow back-up
5. Write an Eliza like program to converse in some domain. The program should consist of two parts, a database of rules and the code that matches rules against the input and uses them to generate output. The left side of each rule should be a pattern that can be matched against a sentence input by the user. The right side should specify the response that the system will generate if the corresponding left side matches
6. Develop an knowledge base system consisting of facts and rules about some specialized knowledge domain of your choice.
7. Implement Unification Algorithms. Input data sets may be any Well Formed Formulas.
8. Write a program to schedule a meeting between five busy people using default reasoning. The output should give the time, place and day of the meeting.

V SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x	x			x						

(104CA84) WEB TECHNOLOGIES LAB

- Develop static pages (using Only HTML) of an online Bookstore. The pages should resemble: www.amazon.com. The website should consist the following pages.
 - Home page
 - Registration and user Login
 - User Profile Page
 - Books catalog
 - Shopping Cart
 - Payment By credit card
 - Order Conformation
- Validate the Registration, user login, user profile and payment by credit card pages using JavaScript.
- Create and save an XML document at the server, which contains 10 users information. Write a program, which takes User Id as an input and returns the user details by taking the user information from the XML document.
- Bean Assignments
 - Create a Java Bean which gives the exchange value of INR (Indian Rupees) into equivalent American/Canadian/Australian Dollar value.
 - Create a simple Bean with a label - which is the *count* of number of clicks. Than create a Bean Info class such that only the “*count*” property is visible in the Property Window.
 - Create two Beans-a) Key Pad .b) Display Pad. After that integrate the two Beans to make it work as a Calculator.
 - Create two Beans Traffic Light (Implemented as a Label with only three background colors- Red, Green, Yellow) and Automobile (Implemented as a Text Box which states its state/movement). The state of the Automobile should depend on the following Light Transition Table.
 Light Transition Automobile State
 Red ---> Yellow Ready
 Yellow ---> Green Move
 Green --> Red Stopped
- Redo the previous task using JSP by converting the static web pages of assignments 2 into dynamic web pages. Create a database with user information and books information. The books catalogue should be dynamically loaded from the database. Follow the MVC architecture while doing the website.

V SEMESTER

A	B	C	D	E	F	G	H	I	J	k
	x			x						x

(104CA85) COMPREHENSIVE VIVA

There shall be a Comprehensive Viva-Voce in V semester. The comprehensive Viva-voce will be conducted by a committee consisting of Head of the Department and two senior faculty members from the department. The comprehensive viva-voce is aimed to assess the students understanding in various subjects he/she studies upto V semester. The comprehensive viva-voce is evaluated for 50 marks by the committee. .

V SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x	x			x						

(104CA86) MINI PROJECT AND SEMINAR

There shall be a mini-Project in the V Semester. Mini project shall be submitted in report form and should be presented before a committee, which shall be evaluated for 50 marks. The committee consists of Head of the department and supervisor of the mini project and two senior faculty nominated by head.

Work in progress as evaluated by Internal guide :	15 Marks
Demonstration of the mini project and report :	15 Marks
Seminar presentation and defence :	20 Marks

VI SEMESTER

A	B	C	D	E	F	G	H	I	J	k
x	x	x	x		x	x		x	x	x

(104CA87) PROJECT WORK

Every candidate shall be required to submit a project report on a topic approved by project review committee. A Project Review committee (PRC) of the college is to be constituted with Head of the Department, Professors, and two other senior faculty members.

A candidate shall submit status report in three stages after five weeks, ten weeks and fifteen weeks. The PRC may recommend an improvement of the project or a change of project at any stage. The PRC may authorize the supervisor to check or verify if the quantum-quality of the revised version of work is acceptable or not. The supervisor will issue a letter to the student and permit him to continue the project work with a copy to the Head of the department.

A candidate is permitted to submit project/thesis only after successful completion of theory and practical courses with the approval of PRC not earlier than 16 weeks from the date of approval of the project work. For the approval of PRC the candidate shall submit the draft copy of thesis to the Head of the Department with the due recommendation of the supervisor and shall make a successful oral presentation before the PRC. Along with the draft thesis the candidate shall submit draft copy of a paper in standard format fit for publications in Journal/ Conference, based on the project/ thesis, to the Head of the Department with due recommendation of the supervisor. A pre-submission evaluation of the dissertation will be carried out by the PRC.

The viva-voce examination of the project report shall be conducted by a board consisting of the External examiner, the Head of the Department and Supervisor.

The Board shall jointly report candidates work as:

- A. Excellent
- B. Good
- C. Satisfactory
- D. Unsatisfactory

Head of the Department shall coordinate and make arrangements for the conduct of viva-voce examination.