Curriculum for Bachelor of Science in Computer Science

Module Code	Module Name	Hour Distribution					Credits
		IS	A	L	T	P	
Semester I							
351 LA 11	Business Communication	2	2	3	-	1	12
351 MA 12	Basic Mathematics	3	2	4	1	-	15
351 CS 13	Computer Organization and Architecture	2	2	3	1	-	12
351 CS 14	Programming in C	2	2	3	1	-	12
351 CS 17	Modern Information System Laboratory	1	1	1	-	3	9
351 CS 18	C Programming Laboratory	2	1	-	-	3	9
Total Contact Hours=(24hrs/week*15week)=360 hrs+330hrs		**12**	**10**	**14**	**3**	**7**	
Total Credits							**69**
Semester II							
Module Code	**Module Name**	**Hour Distribution**					**Credits**
		IS	**A**	**L**	**T**	**P**	
351 CS 21	Data Structures and Algorithms	2	2	3	1	-	12
351 MA 22	Statistical and Numerical Methods	3	2	4	1	-	15
351 CS 23	Relational Database Management System	2	2	3	1	-	12
351 CS 24	Operating System	2	2	3	1	-	12
351 CS 27	Relational Database Management System Lab	2	1	-	-	3	9
351 CS 28	Operating System laboratory	2	1	-	-	3	9
Total Contact Hours=(23 hrs/week*15week)=345 hrs+345hrs		**13**	**10**	**13**	**4**	**6**	
Total Credits							**69**
Semester III							
Module Code	**Module Name**	**Hour Distribution**					**Credits**
		IS	**A**	**L**	**T**	**P**	
351 CS 31	Computer Graphics	2	2	3	1	-	12
351 CS 32	Visual Programming	2	2	3	1	-	12
351 CS 33	Object Oriented Programming	2	2	3	1	-	12
351 CO 34	Financial Accounting	2	2	3	1	-	12
351 CS 37	Visual Programming Laboratory	2	1	-	-	3	9
351 CS 38	Object Oriented Programming Laboratory	2	1	-	-	3	9
351 IP 40	Industrial Training 4 weeks						10
Total Contact Hours=(22 hrs/week*15week)=330 hrs+330hrs		**12**	**10**	**12**	**4**	**6**	
Total Credits							**81**

Semester IV							
Module Code	**Module Name**	**Hour Distribution**					**Credits**
		IS	**A**	**L**	**T**	**P**	
351 IP 40	Industrial Training 4 weeks						10
351 CS 41	Data Communication and Networking	2	2	3	1	-	12
351 CS 42	Computer Installation & Servicing	2	2	3	1	-	12
351 CS 43	Programming in Java	2	2	3	1	-	12
351 CS 47	Computer Installation & Servicing Laboratory	2	1	-	-	3	9
351 CS 48	Programming in Java Laboratory	2	1	-	-	3	9
351 PJ 49	Mini Project	3	3	-	-	4	15
Total Contact Hours=(22 hrs/week*15week)=330 hrs+360hrs		**13**	**11**	**9**	**3**	**10**	
Total Credits							**79**
Semester V							
Module Code	**Module Name**	**Hour Distribution**					**Credits**
		IS	**A**	**L**	**T**	**P**	
351 CS 51	Software Engineering	2	2	3	1	-	12
351 CS 52	Web Technology	2	2	3	1	-	12
351 CS 53	Computer Network & Security	2	2	3	1	-	12
	Elective I	2	2	4	-	-	12
351 CS 57	Web Technology Laboratory	2	1	-	-	3	9
351 CS 58	Computer Network and Security Laboratory	2	1	-	-	3	9
351 PJ 69	Project Work	2	1	-	-	3	9
Total Contact Hours=(25 hrs/week*15week)=375 hrs+375hrs		**14**	**11**	**13**	**3**	**9**	
Total Credits							**75**
Semester VI							
Module Code	**Module Name**	**Hour Distribution**					**Credits**
		IS	**A**	**L**	**T**	**P**	
351 CS 61	Management Information System	2	2	3	1	-	12
	Elective II	2	2	4	-	-	12
	Elective III	2	2	4	-	-	12
	Elective IV	2	2	4	-	-	12
351 PJ 69	Project Work	2	1	-	-	9	18
Total Contact Hours=(22 hrs/week*15week)=375 hrs+285hrs		**10**	**9**	**15**	**1**	**9**	
Total Credits							**66**
Grand Total Credits = (69 + 69 + 81 + 79 + 75 + 66)							**439**

Elective

Course Code	Elective Title	IS	A	L	T	Credits
351 CS 001	Artificial Intelligence and Expert System	2	2	4	-	12
351 CS 002	Cryptography	2	2	4	-	12
351 CS 003	Advanced Database Management System	2	2	4	-	12
351 CS 004	Software Project Management	2	2	4	-	12
351 CS 005	System Analysis and Design	2	2	4	-	12
351 CS 006	Object Oriented Analysis and Design	2	2	4	-	12
351 CS 007	Mobile Computing	2	2	4	-	12
351 CS 008	Advanced Java Programming	2	2	4	-	12
351 CS 009	E-Commerce	2	2	4	-	12
351 CS 010	Multimedia	2	2	4	-	12
351 CS 011	Internet Programming	2	2	4	-	12
351 CS 012	Multimedia System Design	2	2	4	-	12
351 MG 031	Cost Accounting	2	2	4	-	12
351 MG 032	Principles of Management	2	2	4	-	12
351 MG 033	Total Quality Management	2	2	4	-	12

351 LA 11	BUSINESS COMMUNICATION	L	T	P	Credits	Total Marks
		4	1	1	15	100

Course Objective:

Communication skills is designed to continue developing both **oral and written communication skills**. This again would be achieved through processes of **exploration**, and **discussion** of certain topics (cultural, educational, scientific and others) strengthening, meanwhile, the **independent analytical** and **critical thinking** among students. Teachers should assist students to **internalize** the **underlying structures** of the language through series of supplementary and supporting tasks and activities.

Pre-requisite:

Fundamentals knowledge in English Grammar and Composition.

UNIT I

Practical grammar basic fundamental of grammar and usage, how to improve command over spoken and written English with stress on Noun, Verb Tense and Adjective. Sentence errors, Punctuation, Vocabulary building to encourage the individual to communicate effective and diplomatically, common errors in business writing.

UNIT II

Introduction to Business Communication: Basic forms of communication, Process of communication, Principles of effective Business Communication, 7Cs of Communication, Media of Communication: Types of communication: Barriers of communication (Practical exercise in communication). Leadership – quality of a leader, leadership quiz with case study, knowing your skills and abilities. Introduction to group discussion techniques with debate and extempore, increase your professionalism.

UNIT III

Business letter writing: Need, Functions and Kinds. Layout of letter writing. Types of letter writing: Persuasive letters, Request letters, Sales letters, Complaints and Adjustments. Departmental Communication: Meaning, Need and types: Interview letters, Promotion Letters, resignation letters, newsletters, Circulars, Agenda, Notice, Office memorandums, Office orders, and Press release, Advertisement writing.

UNIT IV

Project and report writing, and proposals – how to write an effective report, basics of project writing, paragraph writing, paper reading and voice modulation, basics of project presentation. Resume writing skills, guidelines for a good resume, how to face an interview board, proper body posture, importance of gestures and steps to succeed in interviews. Practice mock interview in classrooms with presentations on self. Self introduction – highlighting positive and negative traits and dealing with people with face to face.

UNIT V

Business Etiquettes: Business manners, Body language gestures, Etiquette of the written word, Etiquette of the telephone, handling business meetings. How to make a presentation, the various presentation tools, along with guidelines of effective presentation, boredom factors in presentation and how to overcome them, interactive presentation & presentation as part of a job interview, art of effective listening. Role plays on selected topics with case analysis and real life experiences.

List of Practical:

1. Write an official letter
2. Write a personal letter
3. Report Writing
4. Paragraph Writing
5. Dialogue Writing
6. Advertisement Writing
7. Circulars
8. Prepare a Press Release
9. Prepare a Purchase Order
10. Prepare an Agenda for a Meeting
11. Prepare your Curriculum Vitae
12. Office Memorandums

Text Books & References:

1. Wren & Martin, 2003, "English grammar and composition".
2. K. K. Sinha, 2003, "Business Communication", Galgotia Publishers.
3. E. H. McGrath S. J, 2001, "Basic Managerial skills for all", Prentice Hall of India Pvt Ltd, Fourth Edition, New Delhi.
4. Sharan J.Genrson and Steven M.Gerson , 2000, "Technical Writing – Process and Product" , Pearson Education.
5. Raymond V.Lesikar, 1999, John D. Pettit and Mary E.Flatley Lesikass, Basic Communication Tata McGraw Will, 8th Edition.
6. Ray, Reuben, 2001, "Communication today - Understanding Creative Skills", Himalaya Publishing House, New Delhi.
7. Penro Rassberry, Myres, 2000, "Advanced Business Communication", South West College Publishers.
8. R. M. Madhukar, 2004, "Business Communication and Customer Relations", Vikas Publishing House.
9. Stevel. E. Pauley, Daniel G.Riordan, 2000, Technical Report Writing Today, AITBS Publishing & Distributors, India, 5th edition.
10. McGraith, 2002, Basic Managerial Skills for all, Prentice Hall of India, 6th Edition.

351 MA 12	BASIC MATHEMATICS	L	T	P	Credits	Total Marks
		4	1	-	15	100

Course Objective:

This course provides students with a comprehensive study of business mathematics and reviews basic mathematics such as determinants, Matrices, and Permutation and Combinations. It also covers the Probability, Queuing Theory and Operational Research. This course is intended for students interested in pursuing careers in Computer programmer.

Pre-requisite:

Basic Form IV Mathematics knowledge.

UNIT I Symbolic Logic :

Proposition and its types - Negation Disfunction - Conjunction - Tautologies and Contradictions - Logical equivalence - Algebra of propositions - Condition Propositions Converse, inverse and contra-positive preposition - Bi-conditional propositions - Arguments. (Formation of truth lables and simple problems).

UNIT II Sets, Relations and Functions :

Sets - Set-operations - Relation - Equivalence Relation - Partition - Partial order relation - Functions - inverse Functions - Composition of functions - properties of functions - Binary Operation - Courting Principles - Permutations and Combinations -Combinatorial arguments - Countable and uncountable sets.

UNIT III Linear Algebra

Types of matrices - Matrix operations - Canonical forms - inverse of a Matrix - Geometric properties of plane - Linear transformations - Rotation - Reflection - Expansion and Compressions - Shears - Translation - Successive transformation - Rotation - Reflection - Expansion and Compressions - Shears - Translation - Successive transformation - inverse transformation - Rank and nullity - Linear systems and Matrices - Methods of solution to Linear systems (Cramer's Rule) - Characteristic roots - Cayley - Hamilton theorem.

UNIT IV Operation Research

Linear programming: Formulation and Graphical Solutions (of two and three variables) – Canonical and Standard Terms of Linear programming problem- Algebraic solutions – Simplex Method.

UNIT V

Transportation Model – Assignment model. – Sequencing problem.

Text Books & References:

1. T. Veerarajan, 2003, “Probability, Statistics and Random Process”, Tata Mc Graw-Hill, Delhi.
2. P. K. Gupta, Man Mohan, 1998, “Problems in Operations Research”, Sultan Chand & Sons, New Delhi.
3. Four Authors, 2000, “Engineering Mathematics”, Anuradha Agency, Chennai.
4. Richard Bronson, 1999, “Operations Research”, Schaum Outline Series, McGraw-Hill Book Company, Singapore.
5. Prem Kumar Gupta, Dr.D.S.Hira, 2002, “Problems in Operation Research”, S.Chand & Company, New Delhi.
6. T. Veerarajan, 2002, “Engineering Mathematics”, Tata McGraw-Hill, New Delhi.

351 CS 13	COMPUTER ORGANIZATION AND ARCHITECTURE	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objectives:

This module help the students to familiarize with basic computer organization and it's architecture in the internal function of computer.

Pre-requisite:

No formal knowledge is needed.

UNIT I Introduction to Digital Design

Data Representation – Data Types – Complements (signed and unsigned numbers) – Types of Binary Codes – Signed and unsigned numbers - Binary Addition, Subtraction Multiplication, Division, - Logic Gates - Boolean algebra - Map Simplification (up to 4 variable maps): SOP, POS, Don't Care conditions

UNIT II Digital Components - Register Transfer & Micro Operations

Combination Circuits: Half-Adder, Full Adder- Flip Flops – Sequential Circuits - ICs : Decoders ,Encoders, Multiplexers, Registers, Shift Registers, Binary Counters – Sequential circuits - Memory Hierarchy – Types of Memory Unit

UNIT III I/O and Memory Organization

Peripheral Devices – Input-Output Interface – Asynchronous Data Transfer: Handshaking – Serial Transfer – Communication Interface – Modes of Transfer – Priority Interrupt – DMA – Serial Communication- Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory – Memory Management Hardware.

UNIT IV Microprocessor

Introduction to micro computers, microprocessors and Assembly languages - Microprocessor architecture and its operations - 35185 MPU - 35185 instruction set and classifications.

UNIT V Assembly Programming

Writing assembly levels programs - Programming techniques such as looping, counting and indexing addressing nodes - Data transfer instructions - Arithmetic and logic operations - Dynamic debugging. Stack – subroutine - conditional call and return instructions.

Text Books and References:

1. Morris M Mano, 2008, "Computer System Architecture", Prentice Hall of India, 3rd Edition,
2. R. S. Gaonkar, 2006, "Microprocessor Architecture. Programming and Applications with 35185/351351A", Wiley Eastern limited.
3. John. P. Hayes,2006, "Computer Architecture and Organization", Tata McGraw Hill.
4. Hamacher V C , 2005, "Computer Organization", Tata McGraw Hill, New Delhi.
5. Douglas v. Hall, 2003, "Microprocessors and Interfacing Programming and hardware", TATA McGraw Hill, New Delhi.
6. Mathur, 2006, "Introduction to Microprocessor", Third Edition, Tata McGraw-Hill Publishing Co.Ltd..

351 CS 14	PROGRAMMING IN C	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

Provides the students to understand the basic concepts of C language, to acquire sufficient knowledge about Data Structures and able to analyze the programming concept in C language.

Pre-requisite:

No formal knowledge is needed.

UNIT I

C fundamentals character set – Identifiers and keywords – data types – constants – Variables – Declarations – Expressions – Statements – Arithmetic, Unary, Relations and Logical, Assignments and Conditional Operators – Library functions.

UNIT II

Data input output functions – Simple C programs – Flow of control – if, if-else, while, do-while, for loop, Nested control structures – Switch, break and continue, go to statements – Comma operator.

UNIT III

Functions – Definition – Prototypes – Passing arguments – Recursions. Storage Classes – Automatic, External, Static, Register Variables – Multi-file programs.

UNIT IV

Arrays – Defining and Processing – Passing arrays to functions – Multi-dimension arrays – Arrays and String. Structures – User defined data types – Passing structures to functions – Self-referential structures – Unions – Bit wise operations.

UNIT V

Pointers – Declarations – Passing pointers to Functions – Operation in Pointers – Pointers and Arrays – Arrays of Pointers – Structures and Pointers – Files: Creating, Processing, Opening and Closing a data file.

Text Books and References:

1. V. Rajaraman, 2003 “Computer Programming in C” Prentice Hall of India, New Delhi.
2. E. Balguruswamy, 2002, “Programming in ANSI C”, Tata McGraw Hill Publication Company, Second Edition, New Delhi.
3. A. N. Kamthane, 2002, “Programming with ANSI and Turbo C”, Pearson Education, New Delhi.
4. Al Kelley, Iya Pohl, 2001, “A Book on C”, Pearson Education, New Delhi.
5. B. S. Gottfried, 1995, “Schaum’s Outline of Theory and Problems of Programming in C”, Tata McGraw Hill Pub. Co, New Delhi.
6. B. W. Kerninghan, D. M. Ritchi, 1998, “The C Programming”, Prentice Hall of India.

351 CS 17	MODERN INFORMATION SYSTEM LABORATORY	L	T	P	Credits	Total Marks
		1	-	3	9	100

Course Objective:

This is a basic paper for students to familiarize with computer and it's applications in the relevant fields and exposes them to other related papers of IT. Demonstrate and use Word Processing Applications, Spreadsheet Applications and Presentation Software.

Pre-requisite:

No formal knowledge is needed.

UNIT I (Only for Vivavoce & Assignments)

History of Computing – introduction of computers – Generations – Classification of Digital computer system – Anatomy of Digital computers - Computer Languages and packages - Problem definition - Algorithm - Flowchart - Coding, Compiling & Debugging and Running. Memory units –main memory – secondary memory – backup memory - RAM, ROM, EPROM, EEPROM, Flash memory – Auxiliary storage devices. Input devices – keyboard, mouse, OCR, MICR, output devices – VDU, dot matrix printers, laser printers, ink-jet printers, x – y plotters. Computers and society – software piracy – copy protection – computer crime – privacy and security – ethics – computer careers – computer application - Internet and Web browsing.

UNIT II (Only for Viva voce & Assignments)

Introduction of Word: Document – Starting new, opening, entering, inserting, deleting, saving and exiting WORD.

Elements of Word Screen: Menu bar, formatting tool bar, ruler, tile bar, Status bar and scroll bar.

Editing Documents: Selecting the text, deleting, undo features, moving, copying, using cut, copy and paste; searching text and replacing spell check.

Print formatting: Using different fonts, bold, italic, underline, changing cases: Text Formatting – line spacing, changing text justification, changing indent, bulleted and numbered list, borders and shading, style creation.

Page formatting – page numbering, headers, footers, page margins (using ruler), paper size orientation, page preview and merge printing.

Introduction of Excel: Excel Sheet– Starting new, opening, entering, inserting, deleting, saving and exiting Excel.

Elements of Excel Screen: Menu bar, formatting tool bar, ruler , tile bar, Status bar and scroll bar

Editing Worksheet: Entering Data – moving around – select a range of cells – edit data - open – undoing – writing formulas in cell – copying – deleting – inserting – changing – number formatting – statistical functions – logical functions – date functions. Print Formatting – Page Formatting

Advanced Features: Graphs – Graph components

Ms Word

1. Create a letter head of your profile.
2. Create a table with the following columns and display the results in separate cells for the following:
    a. Student Number, Sub1, Sub2, Sub3, Total and Average.
    b. Sort all students in ascending order with the name as the key.
    c. Calculate Total marks and Average of all students.
    d. Find the maximum average mark.
    e. Find the minimum average mark.
3. Create an envelop and mail merge and do the following options
    a. Printing envelops with 'From' and 'To' address.
    b. Using Mail Merge facilities for printing invitations to many persons and for printing mailing labels.
4. Prepare a news letter with borders, two columns text, header and footer and a graphic image and spell check the document.
5. Creating and editing the table using table menu and creating a monthly calendar using cell editing operations like inserting, joining, deleting and splitting cells.
6. Design Visiting card for yourself as per the following specifications:
    Size of the visiting card 3½" x 2"
    Name of the college with watermark
    Phone and Fax numbers with appropriate symbols.
7. Design a macro to format a document as below:
    1.5 line spacing
    12 point Font size with Times New Roman font.
    Justification format style.

MS Excel

8. Calculate the net pay of the employees, following conditions given below
    i. **DA** : 48% of the basic pay if basic pay < 5000 else 41%
    ii. **HRA** : 15.5% of the basic pay.
    iii. **PF** : 15% of the basic pay
    iv. **Income Tax**: Take the rates prevailing at present.
    v. Find who is getting Maximum and Minimum salary?
9. Create an electronic spreadsheet, in which you enter the following decimal numbers, hexadecimal numbers and convert them into octal, binary decimal system and vice versa.
    1. Decimal Numbers : 3, 9, 77, 17, 7, 76, 59, 129, 186, 1024
    2. Hexadecimal : A2, BCD, H15, FF7, 9AD, 23E, 13C
10. Create an electronic spreadsheet of student marks and find the total average and respective class secured by each student.
11. Generate the numbers vertically starting from 10 to 100 with step value 5.

Power Point

12. Create the slide using the Titles layout and a Clip Art with animation.
13. Create the slide using text and bullets and apply animation.
14. Create the slide using Table Template.
15. Create the slide using Chart Template
16. Create a presentation containing information about your aim in life.
17. Create an organization chart of your college administration.
18. Create slideshow in operating sound**.**

Text Books and References:

1. D.P.Nagpal, 2000, "Mastering Microsoft Office" , Wheelers Publishing,New Delhi.
2. Robert H. Blissmer, 1998, "Introducing Computers", John Wiley & Sons.
3. Thomas c. Bartee, 2003, "Digital Computer Fundamentals", McGraw-Hill, Singapore.
4. Alexis Leon, Mathews leon, 1998, "Fundamentals of computer Science and communication Engineering", Vikas Publishing house, New Delhi.

351 CS 18	C PROGRAMMING LABORATORY	L	T	P	Credits	Total Marks
		-		3	9	100

Course Objective:
Provides the students to understand and perform the basic concepts of C programming and applying it in developing applications.

Pre-requisite:
Basic knowledge in computer programming.

1. Simple C Programs

- **a)** Write a program to find the largest of three numbers.
- **b)** Write a program to conversion of Fahrenheit to Celsius and Celsius to Fahrenheit.
- **c)** Write a program to check whether the given year is a leap year or not.
- **d)** Using C program solve the quadratic equation
- **e)** Write a program in C to compute the following formula:
  i) H= ((A*B) + (C/D))+E (ii). Z = (A+B)^2+(C+D)^2
- **f)** Write a program to generate prime numbers.
- **g)** Write a program to calculate Fibonacci series using while loop.
- **h)** Write a program to Find the sum of *n* numbers program using the do statement.
- **i)** Write a program to print the status of a person according to his age:

Age	Status
1 to 12	Child
13 to 19	teen ages
20 to 45	middle age
Above 45	old age

- **j)** Write a program that displays the menu
  - **a)** Addition
  - **b)** Division
  - **c)** Subtraction
  - **d)** Multiplication
- **k)** Using two operands, the above mentioned functions should be performed using switch case construct.
- **l)** Write a program to check whether the entered character is a vowel or not using the Switch case construct.

1. Summation of Series

- **a)** sin(x)
- **b)** cos(x)
- **c)** exp(x)

2. String Manipulations

- **a)** Counting the number of vowels, constants, words, white spaces in a line of text and array lines.
- **b)** Reverse a string & check for palindrome.
- **c)** Substring defection and count.
- **d)** Substring Removal.
- **e)** Find and replacing substrings.

3. **Recursion**
    a) nPr
    b) nCr
    c) GCD of two numbers
    d) Maximum & Minimum
    e) Fibonacci sequence
    f) Tower of Hanoi
4. **Matrix Manipulation**
    a) Addition & Subtraction
    b) Multiplication
    c) Transpose
    d) Determinant of a Matrix
    e) Inverse of a Matrix
5. **Write a program to print the following outputs:**

```
1                                   1
2   2                               2   2
3   3   3                       3   3   3
4   4   4   4                   4   4   4   4
5   5   5   5   5               5   5   5   5   5
```

Text Books & References:

1. V. Rajaraman, 2003 “Computer Programming in C” Prentice Hall of India, New Delhi.
2. E. Balguruswamy, 2002, “Programming in ANSI C”, Tata McGraw Hill Publication Company, Second Edition, New Delhi.
3. A. N. Kamthane, 2002, “Programming with ANSI and Turbo C”, Pearson Education, New Delhi.
4. Al Kelley, Iya Pohl, 2001, “A Book on C”, Pearson Education, New Delhi.
5. B. S. Gottfried, 1995, “Schaum’s Outline of Theory and Problems of Programming in C”, Tata McGraw Hill Pub. Co, New Delhi.
6. B. W. Kerninghan, D. M. Ritchi, 1998, “The C Programming”, Prentice Hall of India.

351 CS 21	DATA STRUCTURES AND ALGORITHMS	L	T	P	Credits	Total Marks
		4	1	-	12	100

Course Objective:
Provides the students to understand basic concepts of various data structures & algorithms, to execute mathematical aspects and analysis of algorithms and to execute sorting and searching algorithms.

Pre-requisite:
C Programming

UNIT I
Fundamentals of algorithm analysis: Introduction -Big 'O' notations, Time and space complexity of algorithms, Elementary data structures and their applications, Structure and Problem Solving.

UNIT II
Arrays: ordered lists, representation of arrays, sparse matrices, linked lists: singly and doubly linked lists, stacks, queues, multiples stacks and queues, Applications: polynomial arithmetic, infix, postfix and prefix arithmetic expression conversion and evaluations.

UNIT III
Trees: Binary trees: Definition, traversal, threaded binary tree, Counting Binary Tree.
Graphs: Representation, traversal, connected components, shortest path and transitive closure, topological sort, activity network, critical path, path enumeration. Dijkstra's Algorithm, Floyd Warshall's Algorithm, Minimum Spanning Tree Definitions.

UNIT IV
Searching & Sorting: Binary Search Tree, Insertion & Deletion, AVL Trees, Hash function, Hash table, Internal sort: Radix sort, Insertion sort, Exchange sort, Selection sort, Quick sort, Shell sort, Merge sort, Heap sort, External sort: K-way merge sort, balanced merge sort, polyphase merge sort.

UNIT V
Files: Files, Queries and sequential organization; Cylinder surface indexing, Hashed Indexed, Tree Indexing, B-Trees, Tree Indexing, Sequential file organizational, random file organization, Hashed file organization, Inverted files, cellular partitions.

Text Books & References:

1. J. P. Tremblay, P. G. Sorenson, 2002, "An Introduction to Data Structures with Applications", Tata McGraw Hill Publishing Company Ltd, Second Edition, Delhi.
2. E. Balagurusamy, 2002, "C and Data Structures", Tata McGraw Hill Pub Co, Delhi.
3. A. V. Aho, J. E. Hopcroft, J. D. Ullman, 2002, "Data Structures and Algorithms", Pearson Education Asia.
4. Nicklaus Wirth, 2002, "Algorithms and Data Structures – Programmes", Prentice Hall of India Pvt. Ltd, New Delhi.
5. Y. Langsam, M. J. Augenstein, A. M. Tenenbaum, 2002, "Data Structures using C and C++", Prentice Hall of India Pvt Ltd, Second Edition, New Delhi.

351 MA 22	STATISTICAL AND NUMERICAL METHODS	L	T	P	Credits	Total Marks
		4	1	-	12	100

Course Objectives:

To study and understand the concepts of statistical methods and Numerical methods and its applications**.**

Pre-requisite:

Basic Mathematics

UNIT I

Diagrammatic and Graphical representation of Numerical Data – Formation of frequency distribution – Histogram, Cumulative Frequency – Polygon and Ogives – Measures of central tendencies – Mean ,Median ,Mode – Measures of dispersion – Mean deviation, standard deviation, variance , Quartile deviation and coefficient of variation.

UNIT II

Probability concepts, random variables, Classification, Stationary process, Markov Process, Binominal Process, Poisson process, Birth and death process, renewal process. Queue Characteristics, Arrival pattern, service patterns, system capacity, Queue disciplines, Markovian queuing models, Little's formula, Multi- server queues, M/G/I Queues.

UNIT III

Roots of Equations: Graphical Method – False – Position Method – Fixed – Point Iteration – Newton – Raphson Method – Secant Method – Bairstow's method.

UNIT IV

Gauss Elimination Gauss– Jordan - Gauss-Jacobi - Gauss - seidel, finding matrix inverse by Gauss - Elimination and Gauss-Jordan.

UNIT V

Numerical Differentiation – Integration : Trapezoidal Rule – Simpson's $1/3^{rd}$ and $3/8^{th}$ Rule – Romberg integration – Differential equations: Taylors method – Euler's method – Runge-kutta 2^{nd} and 4^{th} order methods

Text Books and References:

1. P. Kandasamy, K.Thilagavathy, K. Gunavathy, 2003, Numerical Methods, S.Chand & Company, New Delhi.
2. A.Singaravelu, 2002, Numerical Methods, Meenakshi Agency, Chennai.
3. Veerarajan.T,Ramachandran.T " Numerical method" Tata Mc Graw Hill , New Delhi.
4. Steven C.Chapra, Raymond P.Canale, 2002, Numerical Methods for Engineers, fourth Edition, New York.
5. T. Veerarajan, 2003, "Probability, Statistics and Random Process", Tata Mc Graw-Hill, Delhi.
6. Walpole, R.E., Myers,R.H., Myers,S.L. and Ye K, 2004,"Probability and Statistics for Engineers and Scientists" Pearson Education, Asia, 8^{th} edition.

351 CS 23	RELATIONAL DATABASE MANAGEMENT SYSTEM	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

Provides the students to learn the fundamentals of data models and to conceptualize and depict a database system using ER diagram, to make a study of SQL and relational database design, to understand the internal storage structures using different file and indexing techniques which will help in physical DB design.

Pre-requisite:

Computer Fundamentals

UNIT I

Purpose of Database Systems - Overall system structure - Entity relationship model - Mapping constraints - Primary Keys - Foreign Keys - ER Diagrams.

UNIT II

Relational Model: Structure - Formal Query Languages - Relational Algebra - Relational calculus - SQL.

UNIT III

Relational Database Design : Pitfalls - Normalization using Functional dependencies - Decomposition - Boyce - codd Normal form - Third Normal form - Normalization using multivalued dependencies - Fourth Normal form.

UNIT IV

PL/SQL : Approach and Advantages - PL/SQL Blocks - variables - Manupulating Data - Procedural Constructs - Exception handling - Program Units in Oracle Forms - PL/SQL Editor.

UNIT V

ORACLE : Push Buttons - Radio Groups and Radio Buttons - Check Boxes - List Boxes Dialog Boxes - Alerts - Canvases and Views - Events and Triggers - Creating Multiple Form applications using Developer 2000.

Text Books and References:

1. Ramez Elamassri, B. Shankant, Navathe, 2002, “Fundamentals of Database Systems”, Pearson Education, Third Edition, New Delhi.
2. G.V. Post, 2006, “Database Management Systems Designing and Building Business Application” McGraw Hill International.
3. Abraham Silberschatz, F. Henry Korth, S. Sundarshan, 2007, “Database System Concepts”, McGraw Hill, Fourth Edition.
4. C. J. Date, 2008, “An Introduction to Database Systems”, Pearson Education, Seventh Edition, New Delhi,
5. Raghu Ramakrishnan, 2007, “Database Management Systems”, WCB/McGraw Hill.
6. Albert Lulushi, 2007, “Developing ORACLE FORMS Applications”, Prentice Hall.

351 CS 24	OPERATING SYSTEM	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:
Provides the students to have an overview of different types of operating systems, to know the components of an operating system, to have a thorough knowledge of process management, to have a thorough knowledge of storage management and to know the concepts of I/O and file systems.

Pre-requisite:
Computer Fundamentals & Modern Information System Laboratory.

UNIT I Introduction
Views – Goals – Types of System – OS Structure – Components – Services – System Structure – Layered Approach – Virtual Machines – System Design and Implementation. Process Management: Process – Process Scheduling – Cooperating Process – Threads – Inter-process Communication. CPU Scheduling: CPU Schedulers – Scheduling Criteria – Scheduling Algorithms.

UNIT II Process Synchronization
Critical – Section Problem – Synchronization Hardware – Semaphores – Classical Problems of Synchronization – Critical Region – Monitors. Deadlocks: Characterization – Methods for Handling Deadlocks – Deadlocks Prevention – Avoidance – Detection – Recovery.

UNIT III Memory Management
Address Binding – Dynamic Loading and Linking – Overlays – Logical and Physical Address Space – Contiguous Allocation – Internal & External Fragmentation. Non-Contiguous Allocation: Paging and Segmentation Schemes – Implementation – Hardware – Protection – Sharing – Fragmentation.

UNIT IV Virtual Memory
Demand Paging – Page Replacement – Page Replacement Algorithms – Thrashing. File System: File Concepts – Access methods – Directory Structures – Protection Consistency Semantics – File System Structures – Allocation methods – Free Space Management.

UNIT V I/O System
Overview – I/O Hardware – Applications I/O Interface – Kernel I/O Subsystem – Transforming I/O Requests to Hardware Operations – Performance. Secondary Storage Structures: Protection – Goals – Domain – Access matrix – The Security Problem – Authentication – Threats – Threat Monitoring – Encryption.

Text Books & References:

1. Silbersachatz, Galvin, 2001, "Operating System Concepts", Pearson, Fifth Edition, New Delhi.
2. Dr. R. C. Joshi, 2005, "Operating Systems", Wiley Dramatic.
3. Tannenbaum, 2000, "Operating Systems", PHI, Fourth Edition, New Delhi.
4. E. Madnick, J. Donovan, 2001, "Operating Systems", Tata McGraw Hill, New Delhi.

351 CS 27	RELATIONAL DATABASE MANAGEMENT SYSTEM LABORATORY	L	T	P	Credits	Total Marks
		-	-	3	9	100

Course Objective:

Provides the students to acquire the ability to create, demonstrate and work on database, to perform operations in databases, to develop application packages and to develop application software's.

Pre-requisite:

Computer Fundamentals & Modern Information System Laboratory.

1. Create a table client_master with the following fields client_no, name, address 1 , address2,city, state, pincode, remarks, bal_due with suitable data types.
2. Create another table supplier table from client master. Select all the fields and rename client_no with supplier_no and name with supplier_name.
   a) Insert data into client_master.
   b) Insert data into supplier_master from client_master.
   c) Delete the selected row in the client_master.
3. Create a table to show the salary details of the employees.
4. Create an updatable view to modify and display the details of the employees for the above table.
5. Grant select and update privileges on above table to other users.
6. Grant all the privileges to some other users.
7. Revoke all the above granted permissions.
8. Create a table to store the salary details of the employees in a company. Declare the cursor id to contain employee number, employee name and net salary. Use cursor to update the employee salaries.
9. Create a table 'stock' to contains the item code, item name, current stock, date of last purchase. Write a stored procedure to seek for an item using item code and delete it, if the date of last purchase is before t year from the current date. If not, update the current stock.
10. Create a table to contain phone number, user name, address of the phone user. Write a function to search for a address using phone number.
11. Create a table to contain the information about the voters in a particular constituency. Write a proper trigger to update or delete a row in the table.
12. Create a table 'master_book' to contain the information of magazine code, magazine name, publisher, weekly/biweekly/monthly, price. Write PL/SQL block to perform insert, update, and delete operations on the above table.
13. Create a table student_master with the following fields name, regno, dept and year with suitable datatypes. Use Select command to do the following.
    a) Select the student's name column
    b) Eliminate the duplicate entry in table
    c) Sort the table in alphabetical order
    d) Select all the students of a particular department.

14. Create a table sales_order with s_order_no and product_no as primary key. Set other fields to store client number, delivery address, delivery date, order status.
   a) Add a uew column for storing salesman number using ALTER command.
   b) Set the s_order_no as foreign key as column constraint
   c) Set the s_order_no as foreign key as table constraint
   d) Enforce the integrity rules using CHECK.

15. Create table sales_order_details with the s_order_no as primary key and with the following fields: product_no, description. qty _ordered, qty _disp, product_rate, profit_percent, sell_price, supplier_name
   a) Select each row and compute sell_price*.50 and sell_price *1.50 for each row selected.
   b) Select product_no, profit_percent, sell_price where profit_per is not between 10 and 20 both inclusive.
   c) Select product_no, description. profit_percent, sell_price where profit_percent is not between 20 and 30.
   d) Select the supplier Name and product_no where supplier name has 'r' or 'h' as second character.

16. Create a sales order table and client master table with suitable fields.
   a) Find the total number of quantity ordered for a particular product.
   b) Display the rows of the table in the sales order date wise,
   c) Join the two tables and display the product number, product name, where the order no in the sales_order table and order no in client_master are equal.
   d) Join the sales_order table to itself and display the order number, client number and salesman number where client has been serviced by more than one salesman.

17. Write a PL/SQL code to display the employee details for an employee.

18. Write a PL/SQL code to calculate EB bill for the given units using if statement.

19. Write a PL/SQL block to handle built-in exception like No_DATA_FOUND, TOO_MANY_ROWS.

20. Write a PL/SQL block to use procedure and function and get the result.

21. Write a PL/SQL trigger to update the records while deleting the one record in another table.

22. Create a table to store the salary details of the employees in a company. Declare the cursor id to contain employee number, employee name and net salary. Use cursor to

Text Books & References:

1. Ramez Elamassri, B. Shankant, Navathe, 2002, “Fundamentals of Database Systems”, Pearson Education, Third Edition, New Delhi.
2. G.V. Post, 1999, “Database Management Systems Designing and Building Business Application” McGraw Hill International.
3. Abraham Silberschatz, F. Henry Korth, S. Sundarshan, 2002, “Database System Concepts”, McGraw Hill, Fourth Edition.
4. C. J. Date, 2002, “An Introduction to Database Systems”, Pearson Education, Seventh Edition, New Delhi,
5. Raghu Ramakrishnan, 1998, “Database Management Systems”, WCB/McGraw Hill. Albert Lulushi, 1997, “Developing ORACLE FORMS Applications”, Prentice Hall.

351 CS 28	OPERATING SYSTEM LABORATORY	L	T	P	Credits	Total Marks
		-	-	3	9	100

Course Objective:

Provides the students to Demonstrate the basic DOS and LINUX commands and to do shell programming, to understand the implementation of the scheduling algorithms, paging and segmentation, to demonstrate the implementation of message queues, pipes, FIFO's and signals and to possess knowledge in the implementation of shared memory and semaphores.

Pre-requisite:

Computer Fundamentals & Modern Information System Laboratory.

MS – DOS:

1. Display all the Read Only files in your computer using DIR command.
2. Creating, Changing, Copying, Moving and Removing directories.
3. Write the syntax and purpose of the following commands: XCOPY, BACKUP, RESTORE, and PROMPT.
4. Explain the method of redirecting the output to a file.
5. Creating config.sys, Batch file, and AUTOEXEC.BAT files using EDIT/COPY CON Command.
6. Explain the use of following commands: PATH, PROMPT, SORT.
7. Creating, Viewing, Copying, Moving and Removing files.
8. Explain the use of the following commands: ECHO, SET, FIND, and ATTRIB.
9. Note the DOS error messages, when we are trying to remove a non empty directory using RD command.

WINDOWS:

1. Creating and Removing Folders and Shortcuts.
   Expanding and collapsing folders.
   Recognizing file types using icons.
   Renaming a file or folder.
   Displaying the properties of a file or folder.
2. Installing a screen saver.
3. Assigning a wallpaper to the desktop
4. Adding a program to the Start Menu.
5. Recovering files and folders from Recycle Bin.
6. Customizing the mouse settings.
7. Finding a file or folder by name.
8. Copying and Moving files to other folders and sorting folders.
9. Different ways of selecting two or more files for an operation using keyboard and Mouse.
10. Create two users in your computer. Have different passwords for every user. Change Your password.
11. Interchange the functions of your left and right mouse buttons such that when you right click, an object is selected.
12. Create a new directory with your name in C drive copy files from another directory to your directory.

LINUX:

1. Execute the following commands and write down the results and use of each Command: (i) man (ii) cd (iii) cd. (iv) cd.. (v) ls, ls – a (vi) pwd
2. Make your own subdirectories called uni and linu in your home directory. Then delete the sub directory called uni.
   a) Explore the file system, write what is there in /bin, /usr/bin, /sbin/tmp and /boot. Find and list the devices that are available in your system.
3. **a).** Create a file called intro.text that contains the word "hello I am the student of computer branch". Now copy this file and paste to other directory.
   b) Change the permission of the above file to rwxrwxr-x. You can try different 39 possibilities to change its permissions. Find out what are the different commands available that can be used to change the permissions of a file/files.
   c) Display the name of all files in the home directory using *find*. Can you display the name of all files in the home directory that are bigger than 500 KB.
4. Write and execute the following programs in Linux using Shell script :
   a) Factorial of a given number (ii) Sum of odd / even numbers from M to N
5. Write and execute the following programs in Linux using Shell script :
   a) Find whether a given number is prime number or not.
   b) Find out the maximum and minimum number of the given series
6. Write and execute the following programs in Linux using Shell script:
7. Convert the lowercase characters into uppercase and uppercase characters into lowercase character of a given string.
8. Develop a Calculator application using shell script
9. Implement deadlock Avoidance Algorithm using C language.
10. Implement multithreading concepts using C language.

Text Books and References:

1. Silbersachatz, Galvin, 2001, "Operating System Concepts", Pearson, Fifth Edition, New Delhi.
2. Dr. R. C. Joshi, 2005, "Operating Systems", Wiley Dramatic.
3. Tannenbaum, 2000, "Operating Systems", PHI, Fourth Edition, New Delhi.
4. E. Madnick, J. Donovan, 2001, "Operating Systems", Tata McGraw Hill, New Delhi.

351 CS 31	COMPUTER GRAPHICS	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

Provides the students to understand the basic concepts of Computer Graphics, to acquire sound knowledge in Curves, Surfaces and Solids, to acquire sound knowledge in all Transformations, to acquire sound knowledge in Hidden Surface Eliminations and to acquire sufficient knowledge about the Colour models.

Pre-requisite:

Basic Mathematics & Data Structures and Algorithms.

UNIT I

Overview of Computer Graphics System: Overview of Computer Graphics System – Video display devices – Raster Scan and random scan system – Input devices – Hard copy device.

UNIT II

Output Primitives and Attributes**:** Drawing line, circle and ellipse generating algorithms – Scan line algorithm – Character generation – attributes of lines, curves and characters – Antialiasing.

UNIT III

Two-dimensional Geometric Transformations – Windowing and Clipping – Clipping of lines and clipping of polygons.

UNIT IV

Three-dimensional concepts – Object representations- Polygon table, quadric surfaces, Splines, Bezier curves and surfaces – Geometric and Modelling transformations – Viewing - Parallel and perspective projections.

UNIT V

Visible Surface Detection Methods – Computer Animation.

Text Books & References:

1. D. Hearn, M. Pauline Baker, 2004, “Computer Graphics (C-Version)”, Pearson Education, Second Edition, Delhi.
2. W. M. Neuman, R. F. Sproull, 2000, “Principles of Interactive Computer Graphics”, Mc Graw Hill Book Co.
3. D. F. Roger, 2003, “Procedural elements for Computer Graphics”, Mc Graw Hill Book Co,
4. R. G. S. Asthana, N. K. Sinha, 2002, “Computer Graphics”, New Age Int. Publishers (P) Ltd.
5. J. D. Floey, A. Van Dam, S. K. Feiner, J. F. Hughes, 2001 “Computer Graphics”, Pearson Education, New Delhi.

351 CS 32	VISUAL PROGRAMMING	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

Provides the students to understand the concepts of windows programming, to understand GUI programming using Microsoft Foundation Classes and to enable the students to develop programs and simple applications using Visual C++.

Pre-requisite:

Programming in C, Relational Database Management System.

UNIT I

Customizing a Form – Writing Simple Programs- Toolbox-Creating Controls – Name Property- Command Button – Access Keys – Image Controls – Text Boxes – Labels – Message Boxes – Grid – Editing Tools – Variables- Data Types- String – Numbers.

UNIT II

Displaying Information – determinate Loops – Indeterminate – Loops – Conditions – Built – in Functions-Functions and Procedures.

UNIT III

Lists- Arrays – Sorting and searching – records – Control Arrays – Combo Boxes- Grid Control- Projects with Multiple forms Do Events and Sub Main – Error Trapping.

UNIT IV

VB Objects – Dialog Boxes- Common Controls- Menus- MDI Forms – Testing, Debugging and Optimization – Working with Graphics.

UNIT V

Monitoring Mouse activity – File Handling – File System Controls – File System Objects – COM/OLE – automation –DLL Servers-OLE Drag and Drop.

Text Books & References:

1. Charles Petzold, 2000, “Window Programming”, Microsoft Press, New Delhi.
2. Marion Cottingham, 2006, “Visual Basic”, Peachpit Press, New Delhi.
3. Kate Gregory, 2005, “Using Visual C++”, Prentice Hall of India Pvt. Ltd, New Delhi.
4. H. M. Deitel, P. J. Deitel, 2007, “Java how to program with an Introduction to Visual J++”, Prentice Hall, New Delhi.
5. C. H. Pappas, W. H. Murray, 2008, “Visual C++: The Complete reference”, Tata McGraw- Hill Publishing Company, .
6. R. Stephen Davis, 2006, “Learn Java Now”, Microsoft Press.
7. Jamie Jaworski, 2004, “Java Unleashed”, SAMS Techmedia Publication, New Delhi.
8. Jason Blooberg, Jeff Kawski, Paul Treffers, 2006, “Web Page Scripting Techniques”, Hayden Books, New Delhi.

351 CS 33	OBJECT ORIENTED PROGRAMMING	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

Provides the students to understand the Object oriented Programming concepts such as data abstraction, encapsulation, inheritance, dynamic binding, and polymorphism, to write simple applications using C++, to compare and contrast features of C++ and Java and able to use C++ as the vehicle for illustrating and implementing these concepts.

Pre-requisite:

Programming in C & Data Structures and Algorithms.

UNIT I

Principles of Object Oriented Programming (OOP): Software Evolution – OOP Paradigm – Basic Concepts of OOP – Benefits of OOP – Object Oriented Languages – Applications of OOP.

UNIT II

Introduction to C++; Tokens, Keywords, Identifiers, Variables, Operators, Manipulators, Expressions and Control Structures in C++; Pointers – Functions in C++ - Main Function – Function Prototyping – Parameters Passing in Functions – Values Return by Functions – Inline Functions – Friend and Virtual Functions.

UNIT III

Classes and Objects; Constructors and Destructors; and Operator Overloading and Type Conversions – Type of Constructors – Function overloading.

UNIT IV

Inheritance: Single Inheritance – Multilevel Inheritance – Multiple Inheritances – Hierarchical Inheritance – Hybrid Inheritance. Pointers, Virtual Functions and Polymorphism; Managing Console I/O operations.

UNIT V

Working with Files: Classes for File Stream Operations – Opening and Closing a File – End of file Deduction – File Pointers – Updating a File – Error Handling during File Operations – Command – line Arguments.\

Text Books & References:

1. Yashwant Kanethkar, 2004, “Object Oriented Programming using C++”, BPB, Delhi.
2. R.Venugopal, Rajkumar, T. Ravishanker, 2007, “Mastering C++”, TMH, Delhi.
3. Lafore, 2003, “Object Oriented Programming in Microsoft C++”, Galgotia Publication, New Delhi.
4. H. Schildt, 2008, “C++: The Complete Reference Books”, TMH Publication, New Delhi.
5. E. Balagurusamy, 2005, “Object Oriented Programming with C++', Tata McGraw-Hill, Publishing Company Ltd., New Delhi.

351 CO 34	FINANCIAL ACCOUNTING	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The primary objective of the course is to familiarize the students with the basic accounting principles and techniques of preparing and presenting the accounts for user of accounting information. Efficient Management of a business enterprise is closely linked with the efficient accounting of its finances. Accordingly, the objective of the course is to acquaint the students with the overall framework of financial decision- making in a business unit.

Pre-requisite:

Basic Knowledge on Accounts

UNIT I

Need for Accounting - Development of Accounting - Definition and Functions of Accounting - Limitation of Accounting Book Keeping and Accounting - Is Accounting Science or Art? - End User of Accounting Information - Accounting and other Disciplines- Role of Accountant - Branches of Accounting - Difference between Management Accounting and Financial Accounting - Objectives of Accounting.

UNIT II

Accounting Concepts – Conventions - Objectives of Accounting – Rules – Principles of Double Entry System – Journal – ledger – Subsidiary Books – Cash Book – Pretty Cash Book – Trial Balance – Trading – Profit & Loss Account and Balance Sheet. Books of Account - Preparation of Final Accounts - Profit & Loss Account - Balance Sheet- Preparation of Simple Company Final Accounts.

UNIT III

Meaning of Inventory - Objectives of Inventory Valuation - Inventory Systems - Methods of Valuation of Inventories - Accounting Standard - Valuation of Inventories. Bank Reconciliation Statements – Depreciation and Reserves – Meaning – Need for Depreciation – Methods – Straight Line Method – Diminishing Balance Method – Depreciation Fund Method and Annuity Method only.

UNIT IV

Classification of Income - Classification of Expenditure - Classification of Receipts - Difference between Capital Expenditure & Capitalized Expenditure - Revenue Recognition.
Concept of Income - Accounting Concept's and Income Measurement - Expired Cost & Income Measurement - Relation Principle and Income Measurement - Accountants and Economist's Concept of Capital and Income - Insurance Claims for loss of stock – Claims for loss of profit.

UNIT V

Introduction - Meaning and Definition of a Company - Essential Characteristics of a Company - Kinds of Companies - Private and Public Limited Companies - Formation of Company.

Shares - Share Capital - Accounting Entries - Under subscription – Oversubscription - Calls in Advance - Calls in Arrears - Issue of Share at Premium - Issue of Share at Discount - Forfeiture of Shares - Surrender of Shares - Issue of Two Classes of Shares - Right Shares.

Classification of Debentures - Issue of Debentures - different Terms of Issue of Debentures - Writing off Loss on Issue of Debentures - Accounting Entries.

Text Books & References:

1. Bhattacharya, “Financial Accounting for business managers”, Prentice Hall of India.
2. S. N. Maheshwari, S. K. Maheshwari, 2003, “An Introduction to Accountancy”, Eighth Edition, Vikas Publishing House.
3. Yona.S.M, Killagane, “Financial Accounting for Professional Students–Vol 1 ”, NBAA.
4. Yona.S.M, Killagane, “Financial Accounting for Professional Students–Vol 2 ”, NBAA.
5. J.M.Lyanga, M.Tulli, 2002, “ Financial Accounting- Students Manual”, NBAA.
6. J. R. Monga, Girish Ahuja, 2003, “Financial Accounting”, Eighteenth Edition, Mayoor Paper Backs.
7. M.Y.Khan & P.K.Jain, 2004, Management Accounting, Tata McGraw Hill publishing company Ltd..

351 CS 37	VISUAL PROGRAMMING LABORATORY	L	T	P	Credits	Total Marks
		-	-	3	9	100

Course Objective:

Provides the students to know about VC++ , Visual Basic and Windows Programming paradigms, to understand and to be familiar with the concepts of windows programming, visual basic programming and to be acquainted with VC++ programming, able to familiar with the advanced concepts of visual programming, VC++ programming and to develop the application of windows programming.

Pre-requisite:

C Programming & Relational Database Management System.

1. VISUAL BASIC

- **a)** Simple programs with control structures
- **b)** Adding menus to forms
- **c)** Creating dialog boxes with various options
- **d)** MDI applications
- **e)** Writing code for various keyboard and mouse events
- **f)** OLE container control
- **g)** Simple programs with classes and objects
- **h)** Data access through Data control and DAO.

2. VISUAL C++

- **a)** Creating applications with App wizard
- **b)** Drawing in documents
- **c)** Working with MFC
- **d)** Creating simple SDI and MDI applications
- **e)** Exception handling
- **f)** Loading – Editing and – Adding resources – Linking resources to applications
- **g)** Drawing bitmaps
- **h)** Threads
- **i)** OLE
- **j)** Active X
- **k)** DLL's

Text Books & References:

1. Charles Petzold, 2008, "Window Programming", Microsoft Press, New Delhi.
2. Marion Cottingham, 2006, "Visual Basic", Peachpit Press, New Delhi.
3. Kate Gregory, 2006, "Using Visual C++", Prentice Hall of India Pvt. Ltd, New Delhi.
4. H. M. Deitel, P. J. Deitel, 2007, "Java how to program with an Introduction to Visual J++", Prentice Hall, New Delhi.
5. C. H. Pappas, W. H. Murray, 2004, "Visual C++: The Complete reference", Tata McGraw- Hill Publishing Company, .
6. R. Stephen Davis, 2003, "Learn Java Now", Microsoft Press.
7. Jamie Jaworski, 2004, "Java Unleashed", SAMS Techmedia Publication, New Delhi.

351 CS 38	OBJECT ORIENTED PROGRAMMING LABORATORY	L	T	P	Credits	Total Marks
		-	-	3	9	100

Course Objective:

Provides the students to understand the importance of Dynamic memory allocation and usage, to understand how to initialize the variables, use of Friend function and Operator overloading and to understand the concepts like Inheritance, Virtual function and dynamic binding.

Pre-requisite:

Programming in C, Data Structure

1. Implements PUSH, POP operations of stack using Arrays.
2. Implements PUSH, POP operations of stack using Pointers.
3. Implement add, delete operations of a queue using Arrays.
4. Implement add, delete operations of a queue using pointers.
5. Conversion of infix to postfix using stack operations.
6. Postfix Expression Evaluation.
7. Addition of two polynomials using Arrays and Pointers.
8. Polynomial Multiplication using singly linked list.
9. Creation, insertion, and deletion in doubly linked list.
10. Binary tree traversals (inorder, preorder, and postorder) using linked list and Recursion.
11. Non-recursive inorder traversal.
12. Non-recursive pre-order traversal.
13. Non-recursive post-order traversal.
14. Depth First Search for Graphs using Recursion.
15. Breadth first search for graphs.

Text Books & References:

1. Yashwant Kanethkar, 2004, “Object Oriented Programming using C++”, BPB, New Delhi.
2. R.Venugopal, Rajkumar, T. Ravishanker, 2007, “Mastering C++”, TMH, New Delhi.Robert
3. Lafore, 2003, “Object Oriented Programming in Microsoft C++”, Galgotia Publication, New Delhi.
4. H. Schildt, 2008, “C++: The Complete Reference Books”, TMH Publication, New Delhi.

351 IP 40	INDUSTRIAL TRAINING	L	T	P	Credits	Total Marks
		-	-	-	20	100

Course Objective:

To gain practical experience and appreciate the theoretical principles in real life situation. It also Develop the skills, knowledge and attitudes needed to make an effective start in relevant field.

Pre-requisite:

No formal specific knowledge is needed. Applications of all the skills he/she possessed in the previous semester.

Industrial training is expected to develop an insight in the practical application in the industry, the practice and importance of industrial procedure and a first hand knowledge and understanding of interpersonal relationships in industrial environment.

351 CS 41	DATA COMMUNICATION AND NETWORKING	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

Provides the students to learn the principles of data communications, computer networks, and inter-networking, to understand the functions and design principles of different types of computer networks from LANs to WANs, to learn the TCP/IP protocol stack, to understand other aspects of data communication and networking including security and network administration and to understand the trends of the rapidly evolving communication and networking technologies.

Pre-requisite:

Computer Organization and Architecture and Operating System.

UNIT I

Introduction to Data Communication, Network, Protocols & standards and standards organizations – Line Configuration – Topology – Transmission mode – Classification of Network – OSI Model – Layers of OSI Model.

UNIT II

Parallel and Serial Transmission – DTE/DCE/such as EIA-449, EIA-530, EIA-202 and x.21 interface – Interface standards – Modems –Guided Media – Unguided Media – Performance – Types of Error – Error Detection – Error Corrections.

UNIT III

Multiplexing – Types of Multiplexing – Multiplexing Application – Telephone system – Project 3512 – Ethernet – Token bus – Token Ring – FDDI – IEEE 3512.6 – SMDS – Circuit Switching – Packet Switching – Message switching – Connection Oriented and Connectionless services.

UNIT IV

History of Analog and Digital Network – Access to ISDN – ISDN Layers – Broadband ISDN – X.25 Layers – Packet Layer Protocol – ATM – ATM Topology – ATM Protocol.

UNIT V

Repeaters – Bridges – Routers – Gateway – Routing algorithms – TCP/IP Network, Transport and Application Layers of TCP/IP – World Wide Web.

Text Books and References:

1. Behrouz, Forouzan, 2002, “Introduction to Data Communication and Networking”, TMH, Second Edition, New Delhi.
2. Jean Walrand, 2008, “Communication Networks (A first Course)”, WCB/McGraw Hill, Second Edition, New Delhi.
3. William Stallings, 2005, “Data and computer communication”, PHI, New Delhi.
4. E. Douglas Comer, 2008, “Internetworking with TCP/IP- Volume I”, PHI, New Delhi.
5. F. James Kurose, W. Keith Rose, 2005, “Computer Networking”, Pearson Addison Wesley, New Delhi.

351 CS 42	COMPUTER INSTALLATION & SERVICING	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

Provides the students to acquire sufficient knowledge about Processors, to acquire knowledge about Computer Peripherals, to acquire knowledge about PC Installation and to acquire sufficient knowledge about Trouble Shooting.

Pre-requisite:

Computer Organization and Architecture and Operating System.

UNIT I Inside the PC

Introduction: Evolution of Computer – Block diagram of Pentium - Inside the Pentium – Parts - Mother board, chipset, expansion slots, memory, Power supply, drives and connectors

Systems: Desktop, Lap Top, Specification and features - Comparison table. Server system – IBM server families, Sun Server, Intel processor etc - Workstation.

Mother Board: Evolution – Different forms of mother boards - Riser Architectures. Intel, AMD and VIA motherboards.

Chipsets: Introduction – 945 chipset.

Bus Standards: Introduction – ISA Bus – PCI Bus – PCI Express, USB, and High speed Bus, – Pin details and Architecture.

Bios-setup: Standard CMOS setup, Advanced BIOS setup, Power management, advanced chipset features, PC Bios communication – upgrading BIOS, Flash, and BIOS - setup.

Processors: Introduction – Pentium IV, Hyper threading, dual core technology, Core2Duo technology — AMD Series, Athlon 2000, Xeon processor. Comparison tables. Pentium Pin details, Itanium Processor - Pentium packaging styles.

UNIT II Memory and Daughter Boards

Memory: Introduction - Main memory – Evolution - DRAM – EDO RAM - SDRAM – DDR RAM versions – IT RAM – Direct RDRAM – Memory Chips (SIMM, DIMM, RIMM)- Extended – Expanded – Cache - Virtual Memory- Causes of false memory errors.

Graphic Cards: Introduction - Definition and Layout of Components in Graphics card – Graphics Processor – Video memory – Memory Chart – RAMDAC – Driver Software – 3D – Video capture card installation.

Sound Cards: Introduction - Definition of Various Components – Connectivity –Standards – A3D – EAX – MIDI – General MIDI – PCI Audio – USB Sound – MP3 –SDMI.

Displays: Introduction – CRT – Anatomy – Resolution – refresh rate – interlacing –Digital CRT's – Panel Displays – Introduction – LCD Principles – Plasma Displays – TFT displays.

Display adapter: Introduction - VGA and SVGA cards, flickering, Demagnetizing and precautions.

Keyboard, and Mouse and barcode scanner: Introduction – Keyboard , wireless Keyboard – Signals – operation - troubleshooting - Mouse types, connectors , Serial mouse, PS/2 mouse and Optical mouse operation – Signals – Installation – barcode scanner - operation.

UNIT III Disk Drives

Hard Disk: Introduction – Construction – Working Principle - Specification of IDE, EIDE, Ultra ATA, Serial ATA, SCSI, Disk Array controller, solid state drive. HDD Installation – Partition – Formatting. Troubleshooting hard disk drives; problem diagnosis, typical problems and troubleshooting; Hard disk drive, components, Head Actuator mechanism Head positioning of a voice coil base system.

CD/DVD ROM: Introduction – Basics, Working principle – various formats (Books) – CDR, CD-RW, DVD: Introduction – Formats – Technology – DVD-ROM, DVD Video, DVD Audio – Recordable formats – DVD-R, DVD-RW, DVD-RAM

Special type of drives: Zip drive, Memory stick, USB-flash drive, IPod Dock version and installation.

I/O Ports: Serial – Parallel – USB – Game Port – Blue tooth interface, IR connector, Signal specification problems with interfaces.

UNIT IV I/O Devices and Power Supply

Printers: Introduction – Types of printers – Dot Matrix – Inkjet – Laser - Operation – Construction – Features – Troubleshooting Dot matrix, Inkjet and laser printer problems.

Modem and Router: Modem - Introduction – Operation – Types – Installation – Router - introduction.

Scanners: Introduction – operation – Scan Resolution - Color Scanners – Scan modes – File formats - Simple problems and troubleshooting.

Digital Camera: Introduction – Operation – Features.

Web Camera, Biometric devices: Thump scanner, Iris scanner, speech synthesizer - operation and installation - Trouble shooting.

SMPS: Principles of Operation – Block Diagram – AT & ATX Power Supply, connector specifications and protection.

UNIT V Trouble Shooting PC

Room Preparation and Power supply: Location – Pollution – Air-conditioning – Power Supply – Voltage Regulators – Servo Stabilizers – UPS, Surge suppressors and spike isolators.

Installation practice: Routine checks - Preventive maintenance - problem causes, peripheral and general precautions.

Faults elimination process: Dead system spurious problem - security failures - heartbeats and multiple faults - Systematic trouble shooting - Symptoms observation – analysis - Fault diagnosis and fault rectification.

POST: Definition – IPL hardware – POST Test sequence – beep codes and error messages.

Diagnostic Software and Viruses: Computer Viruses – Precautions – Anti-virus Software – identify the signature of viruses – Firewalls and latest diagnostic softwares.

Text Books & References:

1. B.Govindrajalu, IBM PC and CLONES, Tata McGraw-Hill Publishers
2. D.Balasubramanian, 2005, Computer Installation and Servicing, Tata McGraw Hill.
3. M.Radhakrishnan, 2001, Computer Installation and Troubleshooting, ISTE- Learning Materials.
4. Minasi, The complete PC upgrade and Maintenance Mark, BPB Publication
5. Peter Norton, Inside the PC, Tech Media
6. Stephen J Bigelow, 2001, Troubleshooting, Maintaining and Repairing PCs, Tata McGraw Hill Pub.

351 CS 43	PROGRAMMING IN JAVA	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

To enable the students to be aware of the latest developments related to Java/Web Technologies, to be familiar with concepts of Object -Oriented Software Design and Development, to understand how to build applications written in Java using Object Oriented design techniques.

Pre-requisite:

Object Oriented Programming.

UNIT I

Introduction to Java – Features of Java – Object Oriented Concepts – Lexical Issues – Data Types – Variables – Arrays – Operators – Control Statements.

UNIT II

Classes – Objects – Constructors – Overloading method – Access Control – Static and fixed methods – Inner Classes – String Class – Inheritance – Overriding methods – Using super – Abstract class.

UNIT III

Packages – Access Protection – Importing Packages – Interfaces – Exception Handling – Throw and Throws – Thread – Synchronization – Messaging – Runnable Interface – Inter thread Communication – Deadlock – Suspending, Resuming and stopping threads – Multithreading.

UNIT IV

I/O Streams – File Streams – Applets – String Objects – String Buffer – Char Array – Java Utilities – Code Documentation.

UNIT V

Networks basics – Socket Programming – Proxy Servers – TCP/IP Sockets – Net Address – URL – Datagram – Working with windows using AWT Classes – AWT Controls – Layout Managers and Menus.

Text Books & References:

1. Herbert Schildt, 2007, “Java - The complete Reference Books”, Tata Mcgraw Hill, New Delhi.
2. John Rodley, 2008,”Writing Java Applets”, The Coriolis group, New Delhi.
3. H. Chrison Pappar, H. William Murray, 2008, “Java with Borland C++”, AP Professional Publications, New Delhi.
4. S. Cay Horstman, Gary Cornell, 2006, “Core Java 2 Fundamentals Vol I”, PHI, Fifth Edition, New Delhi.

351 CS 47	COMPUTER INSTALLATION & SERVICING LABORATORY	L	T	P	Credits	Total Marks
		-	-	3	9	100

Course Objective:

Provides the students to do operating system installation, to do software installation, to do hardware installation, to identify the parts, to perform assembling of computers and to perform servicing of various hardware components.

Pre-requisite:

Operating System.

1. Dismantling and Identifying of Computer Hardware Units.
   SMPS, Mother Board, CDROM, Floppy Drive, Hard Drive, Interface Boards.
2. Computer Configuration upgrades
   Memory, Hard Drive, Video, Modem, Disk Drive, SCSI, Specialized Interface Devices
3. HDD Installation
   a) Configuring CMOS-Setup
   b) De-Fragmenting/ Formatting Hard Disk
   c) Partitioning using Flash Disk
   d) Master/Slave
4. Operating System Installation methods
   Microsoft Windows OS, Red Hat Linux, Duel Operating system Installation
5. Booting Methods
   a) CD/DVD Booting
   b) Hard disk Booting & Flash disk Booting
6. Installation of CD/DVD-Writer
   a) Burning data/Audio/Video files in a Blank CD/DVD
   b) Multi-Session Burning
   c) Copy Protected Burning
7. Computer Trouble shooting and Repairing methods
   Mother board problems, Hard disk Failure, RAM Fault, Processor Failure, and Virus Attack, Fixing Corrupted Operating system files, Installing Missing operating files.
8. Anti Virus and its Types
   a) PC Anti-virus Installation and Maintenance
   b) Internet Security
   c) Network Security

9. Printer Installation and Servicing
   a) Installing a DOT Matrix / Laser / Inkjet printer
   b) Printer trouble shooting Printer/Head Cleaning
10. Installation of Accelerated Graphics Port Card
11. Installation of Scanner and Maintenance
   a) Infrared cleaning
12. Installing and Configuring a TV Tuner Card

Text Books & References:

1. B.Govindrajalu, IBM PC and CLONES, Tata McGraw-Hill Publishers
2. D.Balasubramanian, 2005, Computer Installation and Servicing, Tata McGraw Hill.
3. M.Radhakrishnan, 2001, Computer Installation and Troubleshooting, ISTE- Learning Materials.
4. Minasi, The complete PC upgrade and Maintenance Mark, BPB Publication
5. Peter Norton, Inside the PC, Tech Media
6. Stephen J Bigelow, 2001, Troubleshooting, Maintaining and Repairing PCs, Tata McGraw Hill Pub.

351 CS 48	PROGRAMMING IN JAVA LABORATORY	L	T	P	Credits	Total Marks
		-	-	3	9	100

Course Objective:
To enable the students to develop programs using Java. Apply the concept of OOPs in JAVA Programming. Perform network and socket programming using JAVA.

Pre-requisite:
Object Oriented Programming.

1. Finding area and Perimeter of a circle. Use Buffered Reader class.
2. Substring Removal from a String. Use String Buffer Class.
3. Determining the order of numbers generated randomly using Random Class.
4. Implementation of Point Class for Image manipulation.
5. Usage of Calendar Class and manipulation.
6. String Manipulation using Char Array.
7. Database Creation for storing e-mail addresses and manipulation.
8. Usage of Vector Classes.
9. Implementing Thread based application & Exception Handling.
10. Application using synchronization such as Thread based, Class based and synchronized statements.

JAVA APPLETS
1. Working with Frames and various controls.
2. Working with Dialogs and Menus.
3. Working with Panel and Layout.
4. Incorporating Graphics.
5. Working with Colors and Fonts.

Text Books & References:

1. Herbert Schildt, 2007, “Java - The complete Reference Books”, Tata Mcgraw Hill, New Delhi.
2. John Rodley, 2006,”Writing Java Applets”, The Coriolis group, New Delhi.
3. H. Chrison Pappar, H. William Murray, 2008, “Java with Borland C++”, AP Professional Publications, New Delhi.
4. S. Cay Horstman, Gary Cornell, 2006, “Core Java 2 Fundamentals Vol I”, PHI, Fifth, Edition, New Delhi.

351 PJ 49	Mini Project	L	T	P	Credits	Total Marks
		-	-	4	15	100

Course Objective:
The module helps the students to analyse and evaluate real time business problem.

Pre-requisite:
Good working knowledge on programming language, GUI programming, operating system, database management, JAVA, Web Technology, etc.

The students are expected to work closely with and under the guidance of their dissertation supervisor. Each student has one member of academic staff allocated as supervisor. It is expected that there will be at least one 1-hour meeting every week of the semester between the student and his supervisor. Depending on the nature of the project and the difficulties encountered by the student, the supervisor is free to increase the hours of weekly interaction with the student accordingly. Each member of academic staff has been given in advance a set of guidelines indicating his responsibilities as dissertation supervisor.

351 CS 51	SOFTWARE ENGINEERING	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

To enable the students to be aware of Different life cycle models, Requirement dictation process, Analysis modelling and specification, Architectural and detailed design methods, Implementation and testing strategies, Verification and validation techniques, Project planning and management and the use of CASE tools.

Pre-requisite:

No specific knowledge is needed for this module, however, only basic understanding of computer terminology is enough.

UNIT I

Introduction to Software Engineering: Definitions – Size Factors – Quality and Productivity Factors – Managerial Issues – Planning a software project: Defining the problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organization structure – Other Planning Activities.

UNIT II

Software Cost Estimation: Software cost factors – Software Cost Estimation Techniques – Staffing-level Estimation – Estimating Software Maintenance Costs – The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT III

Software design : Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real – Time and Distributed System Design – Test Plans – Milestones, walkthroughs, and Inspections.

UNIT IV

Implementations issues: Structured Coding Techniques – Coding Style – Standards and Guidelines – documentation guidelines – Type Checking – Scoping Rules – Concurrency Mechanisms.

UNIT V

Quality Assurance – Walkthroughs and Inspections – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification: Enhancing Maintainability during Development – Managerial Aspects of Software Maintenance – Source Code Metrics – Other Maintenance Tools and Techniques.

Text Books and References:

1. S. Roger Pressman, 2007, “Software Engineering: A Practitioner Approach”, McGraw- Hill, Fifth Edition, New Delhi.
2. Fairley, 2005, “Software Engineering Concepts”, McGraw- Hill, New Delhi.
3. I. Sommerville, 2003, “Software Engineering”, Addison Wesley, Fifth edition, New Delhi.
4. David Gustafson, 2003, “Software Engineering Schaum’s outlines”, Tata McGraw Hill, New Delhi.

351 CS 52	WEB TECHNOLOGY	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

To enable the students to get an introduction about various Scripting Languages, to know techniques involved to support real-time Software development and to do up-to-date survey of developments in Web Technologies.

Pre-requisite:

Object Oriented Programming and Java programming

UNIT I

Internet Basic – Introduction to HTML – List –Creating Table – Linking document- Frames- Graphics to HTML Doc- Style sheet- Style basic – Add style to document- Creating Style sheet rules – Style sheet properties – Font- Text List- Colour and background colour-Box Display properties.

UNIT II

Introduction to JavaScript- Advantage of JavaScript Syntax- Data type- Variable – Array – Operator and Expression- Looping Constructor- Function –Dialog box.

UNIT III

JavaScript document object model- Introduction- Object in HTML – Event Handling- Window Object- Document object –Browser Object from Object- Navigator Object- Screen object- Build in Object – User defined object- Cookies.

UNIT IV

ASP.NET Language Structure- Page Structure Page event, Properties & Complier Directives. HTML server controls – Anchor, Tables, Forms, Files Basic Web server Controls- Label, Textbox. Button, Image, Links Check & Radio button, Hyperlink. Data List Web Server Controls-Check box list Radio button list Drop down list, List box, Data grid Repeater.

UNIT V

Request and Response Objects, Cookies, Working with Data-OLEDB connection class, command class, transaction class, data adaptor class, data set class. Advanced Issues- Email, Application Issues, Working with IIS and page Directives, Error handling. Security - Authentication, IP Address. Secure by SSL & Client Certificates.

Text Books & References:

1. Eric Ladd, Jim O, Donnell, 2007, “Using HTML 4 XML and JAVA”, Prentice Hall of India- QUE, New Delhi.
2. Jason Hunter, William Crawford, 2008, “Java Servlets Programming”, O’Reilly Publication, New Delhi.
3. Jeff Frantzen, Sobotka, 2006, “Java Script”, Tata Mc Graw Hill, New Delhi.
4. Eillotte Rusty Harold, 2008, “Java Network Programming”, O’Reilly Publication, New Delhi.

351 CS 53	COMPUTER NETWORK & SECURITY	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

To enable the students to get more experience in computer network and trouble shooting security issues by managing networks.

Pre-requisite:

Data Communication and Networking and Computer Installation and Servicing.

UNIT I Conventional Encryption

Introduction, Conventional encryption model, Stegnography, Data Encryption Standard, block cipher, Encryption algorithms, confidentiality, Key distribution.

UNIT II Local and Wide Area Network Topologies and Hardware

Physical and Logical Topologies - Network Switching - Ethernet Local Area Networks - Networking Hardware - Wide Area Networking Technologies -WAN Topologies – WAN and WAN Transmission Methods - WAN Implementation and Remote Connectivity

UNIT III IP Security

IP Security Overview, IP security Architecture, authentification Header, Security payload, security associations, Key Management- Malicious Logic, Vulnerability Analysis, Auditing and Intrusion Detection

UNIT IV Web Security

Web security requirement, secure sockets layer, transport layer security, secure electronic transaction, dual signature-- Enterprise Network Security: Issues, Concepts, and Techniques-Ensuring Network Integrity and Availability

UNIT V System Security

Intruders, Viruses, Worms, firewall design, Trusted systems, antivirus techniques, digital Immune systems-Troubleshooting Network Problems - Maintaining and Upgrading Computer Networks -Managing Network Design and Implementation

Text Books & References:

1. William Stallings, 2006, "Cryptography and Network security",2nd Edition,Prentice Hall of India, New Delhi,
2. Baldwin R and Rivest.R. 2007, "The RC5,RC5-CBC,TC5-CBC-PAD and RC5-CT5 Algorithms, RFC2040",.
3. Jean Walrand, 2008, “Communication Networks (A first Course)”, WCB/McGraw Hill, Second Edition, New Delhi.

351 CS 57	WEB TECHNOLOGY LABORATORY	L	T	P	Credits	Total Marks
		-	-	3	9	100

Course Objective:
To enable the students to design and program using Java Script to perform website Design and able to use ASP.NET.

Pre-requisite:
JAVA Programming.

1. Create a simple page introducing yourself, what is your name, what are you studying, which department belongs you, how old you are, what you like and dislike. Modify the introduction to include a bullet list of what you do and put list the 5 things you like most and dislike as numbered lists. Create another page about your favourite hobby, and link it to (and from) your main page. Centre something, and put a quote on one of your pages.
2. Insert an existing image on a web page. Create a table, use a heading and at least one use row span/col span. Colour page and some text within the page. Link to another site
3. Create a new file called index. Html.
   a) At the bottom of the page (i.e. the last thing between the body tags) put the following;
   b) A horizontal rule.
   c) A link to your email address (with your name between the tags).
   d) Above this block (which is called the footer), put a title in heading tags.
   e) Add some text describing yourself. (You can split this into multiple headings and paragraphs if you wish.
4. Write a script to create an array of 10 elements and display its contents.
5. Write a function in Java Script that takes a string and read it character by character.
6. Create a simple calculator using form fields. Have two fields for number entry & one field for the result. Allow the user add, subtract, multiply & divide.
7. Create a document and add a link to it. When the user moves the mouse over the link, it should load the linked document on its own. (User is not required to click on the link).
8. Create a document, which opens a new window without a toolbar, address bar, or a statues bar that unloads itself after one minute.
9. Create a document that accepts the user's name in a text field form and displays the same the next time when the user visits the site informing him that he has accessed the site for the second time, and so on.
10. Create a Web form for an online library. This form must be able to accept the Membership Id of the person borrowing a book, the name and ID of the book, and the name of the book's author. On submitting the form, the user (the person borrowing the book) must be thanked and informed of the date when the book is to be returned. You can enhance the look of the page by using various ASP. NET controls.

11. Display an advertisement at the bottom of the Web form that you created in question 10.
12. Create an array containing the title of five new movies. Use this array as a data source for to the user when the user clicks on the submit button.
13. Create a virtual directory in IIS. Create a global. asax file and include the "Session_Start" and "Session_End" and, "Application_ BeginRequest" and "Application_ EndRequest" events. Write a simple ASP.NET page and execute it in browser. What is the output that you get?

Text Books and References:

1. Eric Ladd, Jim O, Donnell, 2007, "Using HTML 4 XML and JAVA", Prentice Hall of India- QUE, New Delhi.
2. Jason Hunter, William Crawford, 2008, "Java Servlets Programming", O'Reilly Publication, New Delhi.
3. Jeff Frantzen, Sobotka, 2006, "Java Script", Tata Mc Graw Hill, New Delhi.
4. Eillotte Rusty Harold, 2008, "Java Network Programming", O'Reilly Publication, New Delhi.

351 CS 58	COMPUTER NETWORK AND SECURITY LABORATORY	L	T	P	Credits	Total Marks
		-	-	3	9	100

Course Objective:

To enable student to perform different network cabling, establish different network connection and configuring router for any topology with security.

Pre-requisite:

Data Communication and Networking and Computer Installation and Servicing.

1. Do the following Cabling works in a network
   a) Cable Crimping.
   b) Standard Cabling.
   c) Cross Cabling.
2. Establish a LAN connection using bus topology.
3. Establish Peer to Peer network connection in LAN.
4. Interface PCs using connectivity devices – Hub, router and switch.
5. a) Configure IP Address in a system in LAN (TCP/IP Configuration)
   b) Configure DNS to establish interconnection between systems.
6. a) Transfer files between systems in LAN using FTP Configuration
   b) Login a system remotely using telnet protocol
7. a) Install and configure Network interface card in LAN system
   b) Share a file and printer (remotely) between two system in a LAN
8. Establish security in a system using firewall configuration
   Create and share the user rights by accessing server for a specific user groups
9. Install and configure the following
   a) A DHCP server in windows with IP Address ranging from 192.168.1.1 to192.168.1.100
   b) Configure a DHCP Client
10. Transfer Files between wireless Communication.
11. Configure Mail server

The Following programs to be written in 'C'

12. Write a program that takes a Binary file as input and finds error check using different Mechanism.
13. Write a Client program to download a file from HTTP server.
14. Write a program to Simulate Sliding Window Protocol

Text Books and References:

1. William Stallings, 2006, "Cryptography and Network security",2nd Edition,Prentice Hall of India, New Delhi,
2. Baldwin R and Rivest.R. 2007, "The RC5,RC5-CBC,TC5-CBC-PAD and RC5-CT5 Algorithms, RFC2040",.

351 CS 61	MANAGEMENT INFORMATION SYSTEM	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The objective of the course is to acquaint the students about the concept of information system in business organizations, and the management control systems.

Pre-requisite:

351 CS 103 Computer Fundamentals, 351 CS 107 Modern Information System Laboratory, 351 CS 204 Operating System & 351 CS 401 Data Communication and Networking.

UNIT I

Definition of Management Information System – Structure of MIS – Information system for decision making – The role of system analyst – Data base Management system

UNIT II

Computers and Information Processing – Classification of computer – Mainframes – Mini Computers – Workstations – micro computers – super computers – Personal Computers – Input Devices – Computer mouse – touch screen – MICR – OCR – pen based input – digital scanners – voice input devices – sensors – Output devices – video display terminals – printers – plotters – voice output devices – Secondary storage – magnetic disk storage – magnetic tap storage – optical disk storage.

UNIT III

System Analysis – System Planning and mutual investigation – Information gathering MIS Organisation – Top Management – Data Processing group's responsibility.

UNIT IV

Management and MIS – Strategic information system – MIS as competitive advantage – implications for managers – MIS support for planning, organizing, operating, controlling and knowledge work – specific function – finance – personnel – production – materials – marketing – computer – hardware and software – Data representation in computers – Batch Processing Vs. online processing.

UNIT V

Decision Support System – definition – examples of DSS – components – building DSS – Group Decision Support System – GDSS tools – role of DGSS – Executive System – role developing DSS – benefits – examples

Text Books & References:

1. Kenneth C. Laudon and Jane Price Laudon, Management Information systems Managing the digital firm, Pearson Education Asia.
2. Effy oz, 2000, “Management Information Systems”, Thomson Learning Course Technology, Second Edition.
3. W. S. Jawadekar, 2002, “Management Information Systems”, Tata McGraw Hill Publishing Company Limited.
4. Murdick, G. Robert, “Information System for Modern Management”, Prentice Hall of India Pvt. Ltd. New Delhi.
5. K. Basandra Suresh, “Management Information Systems”, Wheeler Publishing, New Delhi.

351 PJ 69	PROJECT WORK	L	T	P	Credits	Total Marks
		-	-	12	27	100

Course Objective:
The module helps the students to analyse and evaluate real time business problem.

Pre-requisite:
Good working knowledge on programming language, GUI programming, operating system, database management, JAVA, Web Technology, etc.

The students are expected to work closely with and under the guidance of their dissertation supervisor. Each student has one member of academic staff allocated as supervisor. It is expected that there will be at least one 1-hour meeting every week of the semester between the student and his supervisor. Depending on the nature of the project and the difficulties encountered by the student, the supervisor is free to increase the hours of weekly interaction with the student accordingly. Each member of academic staff has been given in advance a set of guidelines indicating his responsibilities as dissertation supervisor.

351 CS 001	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course provides the students to have a strong foundation of fundamental concepts in Artificial Intelligence, to have a basic exposition to the goals and methods of Artificial Intelligence and to enable the student to apply these techniques in applications which involve perception, reasoning and learning.

UNIT I

Introduction – evaluation of Artificial Intelligence production Systems – search Strategies Hill climbing back tracking graph search (Algorithm A and A*) properties of A* algorithm, monotone restriction specialised production systems – AO* algorithm.

UNIT II

Searching game trees : Minimax procedure alphabeta pruning – Introduction to predicate calculus Answer Extraction – Introduction to knowledge based systems – Knowledge Processing techniques – Knowledge inference techniques.

UNIT III

Expert System Definition – Various stages in developing expert system – Knowledge representation using sematicness, predicate calculus, frames – scripts – knowledge acquisition techniques – factors to be considered while expert systems.

UNIT IV

Forward Chaining, Backward Chaining – Tools for developing an expert system – explanation facilities – Meta Knowledge – fuzzy reasoning.

UNIT V

Building various expert systems – case study Dendral, Mycin etc. Introduction to various applications of A.I. Natural Language processing – Natural Language understanding – perception – Learning using neuralnets.

Text Books & References:

1. Elaine Rich, 2000, Artificial Intelligence McGraw Hill International.
2. P.H. Winston, 2007, Artificial Intelligence, Addison Wessley.
3. Fredrick Hayes Roth, Donald A Waterman and Doughlas B.Leant (editors), 2003, Building Expert System, Addison Wesley.
4. N.J. Nilson, Spring verlag, 2003, Principles of Artificial Intelligence.
5. David W. Rolston, 2002, Principles of Al & Expert Systems Development, McGraw Hill.

351 CS 002	CRYPTOGRAPHY	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course provides the students to have a strong foundation of fundamental concepts in encryption and Decryption in day today affairs.

UNIT I Conventional Encryption:

Conventional encryption model – DES – RC 5 – Introduction to AE 5 – Random number generation.

UNIT II Number Theory and Public Key Cryptography:

Modular arithmetic – Euler's theorem – Euclid's algorithm – Chinese remainder theorem – Primality and factorization – Discrete logarithms – RSA algorithm – Difie heimann key exchange.

UNIT III Message Authorization and Hash Functions:

Hash functions – Authentication requirements – authentication function – Message Authentication codes – Secure Hash Algorithms.

UNIT IV Digital Signature and Authentication Protocols:

Digital Signature – Authentication Protocols – Digital Signature Standard.

UNIT V Network Security:

Prettry good privacy – S/MIME-IP Security Overview – Web Security.

Text Books & References:

1. Stallings, W., 2003, "Cryptography and Network Security Principles and Practice", Person Education, Delhi.
2. E. Biham and A. Shamir, 2003, "Differential Crypt analysis of the data encryption standard", Springer Verlag.
3. D. Denning, 2002, "Cryptography and data security", Addition Wesley.
4. N. Kobliz, 2004, A course in Number Theory and Cryptography, Springer Verlag.

351 CS 003	ADVANCED DATABASE MANAGEMENT SYSTEM	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

Provides the students to learn the advanced database design, to understand the internal storage structures using different file and indexing techniques which will help in physical DB design, to know the advanced concepts of transaction processing, concurrency control techniques and recovery procedures and to have an knowledge about the emerging trends in the area of distributed DB- OO DB- Data mining and Data Warehousing and XML.

UNIT I

Introduction -Relational Database Concepts – Query Processing – Query Optimization – Transaction Concepts - Properties of Transactions – Serializability – Concurrency Control – Lock Based Protocols – Time Stamp Based Protocols – Recovery Systems – Log Based Recovery – Advanced Recovery Techniques.

UNIT II

Distributed And Parallel Databases - Homogeneous and Heterogeneous Databases – Distributed Data Storage – Distributed Transactions – Commit Protocols – Concurrency Control – Distributed Query Processing – Parallel Databases – I/O Parallelism – Inter Query and Intra Query Parallelism – Inter and Intera Operation Parallelism – Design of Parallel Systems.

UNIT III

Object-Based Databases And XML - Object Oriented Databases – Complex Data Types – 00 Data Model – 00 Languages – Persistence – Object Relational Databases – Nested Relations – Inheritance – Reference Types – Querying with Complex Types – Functions and Procedures – XML – Structure of XML - Data XML Document Schema – Querying and Transformation – Application Program Interface – Storage of XML Data – XML applications.

UNIT IV

Administration advanced Querying and retrieval - Performance Turing – performance Benchmarks – Decision support Systems – Data Analysis and OLAP – Data Mining – Data Warehousing – Information Retrieval Systems.

UNIT V

Special Purpose Databases - Temporal Databases – Deductive Databases – Mobile Databases – Multimedia Databases – Spatial Databases – Active Databases.

Text Books & References:

1. Abraham Silberschatz, 2002, Henry F.Korth and S.Sudarshan, “Database System Concepts”, Fourth Edition, McGraw Hill.
2. Raghu Ramakrishnan and Johannes Gehrke, 2000, “Database Management Systems”, McGraw Hill.
3. Ramez Elmasri and Shamkant B.Navathe, 2002, “Fundamentals of Database Systems”, Pearson Education, Delhi.

351 CS 004	SOFTWARE PROJECT MANAGEMENT	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course provides the students to have a strong foundation of fundamental concepts in software requirements, product life cycle, testing of software.

UNIT I

Introduction – Product Life – Project life cycle models - water fall model – Prototyping model – RAD model – Spiral Model – Process Models – Matrics.

UNIT II

Software Configuration Management – Definitions and terminology – processes and activities – Configuration audit – Matrics – Software Quality assurance – definitions – quality control and assurance – SQA Tools – Organisation of Structures - Risk Management – Risk Identification, quantification Monitoring – Mitigation.

UNIT III

Project initiation – Project Planning and tracking – what, cost, when and how – organisational processes – assigning resources – project tracking – project closure – when and how.

UNIT IV

Software requirements gathering – steps to be followed – skills sets required – challenges – matrics – Estimation 3 phases of estimation – formal models for size estimation – translating size estimate to effort schedule estimate, matrics – Design and Development phases – reusability, Technology choices, Standards, Portability user interface – testability – diagonosability etc.

UNIT V

Project Management in testing phase – in the maintenance phase – Impact on internet on project Management.

Text Books & References:

1. Gopalaswamy Ramesh, 2002, "Managing Globle Software Projects" Tata McGraw Hill Publishing Company Ltd, New Delhi.
2. Bob Hughes and Mike Cotterell, 2006, "Software Project Management"2nd edition, Tata McGraw Hill Publishing Company Ltd., New Delhi.

351 CS 005	SYSTEM ANALYSIS AND DESIGN	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course provides the students to have a strong foundation of the design of system analysis in software programming.

UNIT I

Introduction to information System Development - Systems Analyst - Categories of Information System - Systems, Development Strategy - Classical System Development Life Cycle - Structures Analysis Development Method - Tools for System Development.

Managing the Application Development Portfolio - Information Systems Planning Methodologies - Managing Project Review and Selection - Preliminary Investigation - Selecting the Project Development Strategy.

UNIT II

Requirements Analysis and Determination: Activities and Requirements Determination - Basic Requirements - User Transaction requirements - user Decision Requirements - Organisation wide requirements - Fact Finding Techniques - Tools for Documenting Procedures and Decisions.

Structures Analysis Development Strategy - Features of Data Flow Strategy - Tools of Data Flow Strategy - Developing Data Flow Diagrams - Features of Data Dictionary, Application Prototype Development Strategy; Computer Aided System tools.

UNIT III

System Design: The Analysis-to-Design Transition; Specifying Application Requirements - Objectives in Designing an information System - Output Design - Design of input and Control -Design of One-line dialogue - Design of Files and Use of Auxiliary Storage Devices - Design of Database Interaction - Design for Data Communication.

Structured Design: Basic Principles - Objectives of Structured Design - The Structure of Computer Programs - Structure and Procedure - Coupling - Cohesion.

UNIT IV

Implementation, Development management, and Selection of Hardware and Software, Systems Engineering and Quality Assurance - Managing System Implementation - Managing information system Development - Hardware and Software Selection.

UNIT V

Case studies to illustrate the theories covered in this paper: A Manufacturing firm, a service Organization, Super Market System, and an Educational Institution.

Text Books & References:

1. James Senn, 2008, “Analysis & Design of Information Systems” McGraw Hill Publishing Company, Second Edition.
2. Perry Edwards, 2006, “System Analysis & Design”, Mitchell McGraw Hill.

351 CS 006	OBJECT ORIENTED ANALYSIS AND DESIGN	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course provides the students to understand the object oriented life cycle, to know how to identify objects, relationships, services and attributes through UML, to understand the use-case diagrams, to know the Object Oriented Design process, to know about software quality and usability.

UNIT I Introduction

An Overview of Object Oriented Systems Development - Object Basics – Object Oriented Systems Development Life Cycle.

UNIT II Object Oriented Methodologies

Rumbaugh Methodology - Booch Methodology - Jacobson Methodology - Patterns – Frameworks – Unified Approach – Unified Modeling Language – Use case - class diagram - Interactive Diagram - Package Diagram - Collaboration Diagram - State Diagram - Activity Diagram.

UNIT III Object Oriented Analysis

Identifying use cases - Object Analysis - Classification – Identifying Object relationships - Attributes and Methods.

UNIT IV Object Oriented Design

Design axioms - Designing Classes – Access Layer - Object Storage - Object Interoperability.

UNIT V Software Quality and Usability

Designing Interface Objects – Software Quality Assurance – System Usability - Measuring User Satisfaction.

Text Books & References:

1. Ali Bahrami, 2006, “Object Oriented Systems Development”, Tata McGraw-Hill.
2. Martin Fowler, 2002, “UML Distilled”, Second Edition, PHI/Pearson Education.
3. Stephen R. Schach, 2003, “Introduction to Object Oriented Analysis and Design”, Tata McGraw-Hill.
4. James Rumbaugh, Ivar Jacobson, Grady Booch, 2005, “The Unified Modeling Language Reference Manual”, Addison Wesley.
5. Hans-Erik Eriksson, Magnus Penker, Brain Lyons, David Fado, 2004, “UML Toolkit”, OMG Press Wiley Publishing Inc..

351 CS 007	MOBILE COMPUTING	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course provides the students to have a comprehensive and state of the art knowledge in the area of mobile communication, to learn the basics of Routing and protocols in Adhoc and Sensor Networks, to learn Wireless Broadband Networks Technology Overview, Platforms and Standards and to learn management, testing and troubleshooting in Wireless Broadband Networks working principles of wireless LAN, its standards.

UNIT I

Introduction**:** Mobile and Wireless Devices – Simplified REFERENCE BOOKS: Model – Need for Mobile Computing – Wireless Transmissions – Multiplexing – Spread Spectrum and Cellular Systems Medium Access Control – Comparisons.

UNIT II

Telecommunication Systems: Telecommunication Systems – GSM – Architecture – Sessions – Protocols – Hand Over and Security – UMTS and IMT-2000 – Satellite Systems.

UNIT III

Wireless LAN: IEEE S02.11 – Hiper LAN – Bluetooth – MAC layer – Security and Link Management.

UNIT IV

Mobile IP: Goals – Packet Delivery – Strategies – Registration – Tunneling and Reverse Tunneling – Adhoc Networks – Routing Strategies.

UNIT V

Wireless Application Protocol: Wireless Application Protocol (WAP) – Architecture – XML – WML Script – Applications.

Text Books & References:

1. Jochen Schiller, 2004, “Mobile Communications”, Pearson Education, New Delhi.
2. Sandeep Singhal, Thomas Bridgman, Lalitha Suryanarayana, Danil Mouney, Jari Alvinen, David Bevis, Jim Chan, Stetan Hild, 2006, “ The Wireless Application Protocol: Writing Applications for the Mobile Internet”, Pearson Education, New Delhi.

351 CS 008	ADVANCED JAVA PROGRAMMING	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course provides the students to design and develop enterprise strength distributed and multi-tier applications – Using Java Technology, to learn advanced Java programming concepts like reflection, native code interface, threads, etc., to develop network programs in Java, to understand Concepts needed for distributed and multi-tier applications and to understand issues in enterprise applications development.

UNIT I Java Basics- Review

Java Streaming- Components and events handling – Threading concepts- Networking features- Byte code interpretation – Media techniques.

UNIT II Java Data Structures

Lists- Linear Structures- Ordered Structures- Sorting - Trees.

UNIT III Advanced Networking and Beans

Client- Server computing- Sockets- Content and Protocols handlers- Developing distributed applicants- RMI- Remote objects- object serialization – Bean Concepts- Events in Bean Box- Bean customization and persistence.

UNIT IV Java Database Programming

Connecting to Databases – JDBC principles- Databases access- Interacting- database search- Accessing Multimedia databases- Database support in Web applications.

UNIT V Related Java Techniques

3D graphics- JAR file format and creation- Internationalization- Swing Programming Advanced Java Scripting techniques.

Text Books & References:

1. Jame Jaworski, 2006, “Java Unleashed”, SAMS Techmedia Publishers.
2. Campione, Walrath and Huml, 2005, “The Java Tutorial”, Addison Wesley.
3. Duane A.Bailey, 2007, “Java Structures”, McGraw- Hill Publications.
4. Jeff Frentzenand Sobotka, 2004, “Java Script”, Tata Mc Graw- Hill.

351 CS 009	E COMMERCE	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course provides the students to describe E-Commerce Framework, to explain Electronic Systems for Payment, to learn use of E-Commerce Advertising & Marketing, to understand business documents and Digital Library and to understand use of multimedia systems for E-Commerce.

UNIT I

Introduction – Electronic Commerce – Scope – Definition – Trade Cycle – Electronic Markets – Electronic Data Interchange – Internet Commerce – Business Strategy – Value Chain – Supply Chain – Inter Organisational Value Chains – Competitive Advantage – Competitive Strategy – Business Strategy – Existing Business Strategy – Strategy Formulation and Implementation Planning – E-commerce implementation – Evaluation.

UNIT II

Business to Business Electronic Commerce – Inter Organizational Transactions – Credit Transaction Trade Cycle – Variety of Transactions – Electronic Markets – Usage – Advantages and Disadvantages of Electronic Markets – Electronic Data Interchange – Definition – Benefits – Standards – Agreements – Implementation – EDI Security – EDI and Business – EDI Adoption and EDI Maturity – Inter – Organizational - E-commerce.

UNIT III

Business to Consumer Electronic Commerce – Consumer Trade Transactions – Internet Shopping and the Trade Cycle – Other E-commerce Technology – Internet – TCP / IP – Internet Components – Uses of the Internets – HTML – Client Side and Server Side Scripting – Elements of E-commerce – E-Visibility – E-Shop – Online Payments – A Web Site Evaluation Model.

UNIT IV

E-Security – Security in Cyberspace – Designing for Security – Kinds of Threats or Crimes – Virus – Security Protection and Recovery – Encryption – Internet Security Protocols and Standards – Other Encryption Issues.

UNIT V

Legal and Ethical Issues – Major Threats to Ethics – Improving the Ethical Climate – Tort Law on the Internet – Taxation Issues – Legal Disputes on the Internet – Case Study – Internet Book Shop – Electronic Newspaper – Virtual Auction – Online Share Dealing – E-Diversity.

Text Books & References:

1. David Whitely, 2000, “E-Commerce, Strategy, Technologies and Applications”, McGraw Hill.
2. M. Elias Awad, 2002, “Electronic Commerce from Vision to Fulfillment”, Prentice Hall of India.
3. K. Kamesh Bajaj, Debjani Nag, 2000, “E-Commerce, The Cutting Edge of Business”, Tata Mcgraw Hill Pub Co, New Delhi.

351 CS 010	MULTIMEDIA	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course provides the students to be updated with the theories and practices of current multimedia technologies and techniques, to cover technical areas such as the representation and processing of different media, multimedia periphery, processing and compression of multimedia elements (text, digital images, audio and video), multimedia software, multimedia communications, to equip students with the advanced specialist knowledge and skills required for the design, development, implementation, evaluation, and management of multimedia technologies.

UNIT I

Overview - Multimedia and Personalized computing – emerging applications – convergence of computers. Communication and entertainment products – perspective and Challenges – Architecture and issues for distributed multimedia systems – synchronization and QOS – Standards and framework.

UNIT II

Digital Audio representation and processing – representation, Transmission and processing of saved – audio signal processing – digital music making – Brief survey of speech recognition and generation Video Technology – raster scanning – colour fundamentals and Video performance measurements – Artifacts – Video equipment – TV standards.

UNIT III

Digital Video and image compression – introduction – video compression techniques – JPEG – H.261 – MPEG – DVI Technology –Time Based media representation and delivery – models of time – Time and multimedia requirements – support.

UNIT IV

O.S. Support for continuous media applications – limitations in workstation OS. – New OS support – experiments using real time mach – middle ware system services architecture – media stream protocol.

UNIT V

Multimedia Devices, Presentations services and the user interface – multimedia services and window system, client, device control – Tool kits – Multimedia file systems and information models – File system support – data models – multimedia presentation and authoring – current state of the industry – Design paradigms and user interfaces.

Text Books & References:

1. F. John Koegel Bufend , 2002, “Multimedia systems”, Pearson Education, New Delhi.
2. T. Vaughan, 2001, “Multimedia making it work”, Tata McGraw Hill Publications, Fifth edition, New Delhi.
3. K. R. Rao, S. Zoron Bojkovil, A. Dragarad Milovanovic, 2002, “Multimedia Communication Systems”, Prentice Hall of India, New Delhi.

351 CS 011	INTERNET PROGRAMMING	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course provides the students to describe basic Internet Protocols, to explain JAVA and HTML tools for Internet programming, to describe scripting languages – Java Script, to explain dynamic HTML programming and to explain Server Side Programming tools.

UNIT I Java Features

Comparison of Java with C and C++ - Java and Internet – Java Environment – Java Program structure – Java Tokens – Implementing a Java Program – Java Virtual Machine – Constants – Variables – Data Types – Scope of Variables – Type casting – Operators and expressions – Decision Making, Branching and Looping.

UNIT II Classes and Arrays

Defining a class – Constructors – Methods – overloading – static Members – Nesting of Methods – Overriding methods – Final Classes – Abstract Class – Visibility control – Arrays – creating an array – Two Dimensional arrays – Strings – String Arrays – String Methods – String Buffer Class – Vectors – Wrapper Classes.

UNIT III Inheritance, Interfaces and Packages

Defining a subclass – Subclass constructor – Multilevel inheritance – Hierarchical Inheritance – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Java APF Packages – creating a package – Accessing and Using a package – Adding a class to a package – Hiding Classes.

UNIT IV Multithreading Exception Handling and Files Creating Threads

Extending the Thread class – Thread Life cycle – Thread Exception – Thread priority – Synchronization – Runnable Interface – Exceptions – Throwing own Exceptions – Concepts of streams – stream classes – Byte Stream Classes – Character stream Classes – Using Streams – Using file Class –Other Stream Classes.

UNIT V Applet Programming

Difference between Application and Applets – Applet Life cycle – creating an Executable Applet – Designing a Web Page – Adding Applet to HTML File – Passing Parameters to Applets.

Text Books & References:

1. E. Balagurusamy, 2002, “Programming with Java – A primer”, Second Edition, Tata McGraw Hill Publishing Company, Delhi.
2. Herbert Schildt, 2002 “The complete Reference – Java 2”, Fifth Edition, Tata McGraw Hill Publishing Company, Delhi.

351 CS 012	MULTIMEDIA SYSTEM DESIGN	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objectives:

The course provides the students to be updated with the theories and practices of current multimedia technologies and techniques.

UNIT I

What is multimedia: Definitions - CD-Rom and the multimedia highway - Where to use Multimedia - Introduction to making Multimedia: The stages of a Project - What You Need – Multimedia Skills and Training: The team - Macintosh and Windows Production platforms: Macintosh Versus PC – The Macintosh Platform - The windows multimedia PC platform - Networking Macintosh and Windows computers - Hardware Peripherals: Connection - Memory and Storage Devices - Input Devices - Output Hardware - communication Devices.

UNIT II

Basic Tools :Text Editing and Word Processing Tools - OCR Software - Painting and Drawing Tools - 3-D Modeling and Animation Tools - Image Editing Tools - Sound Editing Tools - Animation, Video and Digital Movie Tools - Helpful Accessories - Making Instant **Multimedia:** Linking Multimedia Objects - Office Suites - Word Processors – Spreadsheets – Databases - Presentation Tools. Multimedia Authoring Tools: Types of Authoring Tools - Card and Page Based Authoring Tools – Icon-Based Authoring Tools – Time-Based Authoring Tools - Object Oriented Authoring Tools – Cross - Platform Authoring Notes.

UNIT III

Text: The Power of meaning - About Fonts and Faces - Using Text in Multimedia - Computer and Text - Font Editing and Design Tools - Hypermedia and Hypertext - **Sound:** The Power of Sound - Multimedia Systems Sounds - MIDI Versus Digital Audio - Digital Audio – Making MIDI Audio – Audio file formats - Working with Sounds on the Macintosh-Notation Interchange File Format (NIFF) - Adding Sound to your Multimedia Project - Toward Professional Sound: The Red Book Standard - Production Tips.

UNIT IV

Images: Making Still Images – Color - Image File Formats. Animation: The Power of Motion - Principles of Animation - Making Animation That Work - **Video:** Using Video - How Video Works - Broadcast Video Standards - Integrating Computers and Television – Shooting And Editing Videos –Video Tips - Recording Formats - Digital Video.

UNIT V

Planning and Costing: Project Planning - Estimation-RFPs and Bid Proposals - Designing and Producing: Designing – Producing - Content and Talent: Acquiring Content - Using Content Created by Others - Using Content created for A Project Using Talent - Delivering: Testing - Preparing For Delivery - Delivering on CD-ROM - Compact Disc Technology - Wrapping It Up - Delivering on the World Wide Web.

Text Books and References:

1. Tay Vaughan, 2007, Multimedia: Making it work, Fourth Edition - Tata McGraw hill.
2. John F, 2005, Koegelbuford, Multimedia Systems Addison Wesley.
3. Walter Worth John, A, 2005, Multimedia Technologies and Applications, Ellis Horwood Ltd., London.

351 MG 031	COST ACCOUNTING	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:
The primary objective of the course is to familiarize the students with the basic cost concepts, allocation and control of various costs and methods of costing.

UNIT I
Meaning and Scope of Cost Accounting: Basic cost concepts – Elements of Costs - classification of Costs - Total Cost build up and Cost sheet - Emerging Terms viz. Life Cycle Costing - Activity Based Costing - Back flush Costing.
Materials Control: Meaning – Steps involved – materials and inventory – techniques of material/inventory control – valuation of incoming & outgoing material – material losses.

UNIT II
Labour Cost Control: Direct and Indirect Labour - Steps involved – treatment of Idle time - Holiday Pay - Overtime etc. in cost accounts - casual workers & out workers - Labour turnover - methods of wage payment. Incentive plans.

UNIT III
Overheads: Meaning and Classification of Overheads – Treatment of specific items of overheads in cost accounts – stages involved in distribution of overheads – methods of absorption of overheads – treatment of under and over absorption of overheads.

UNIT IV
Methods of Costing: Single output costing - job costing - contract & batch costing.

UNIT V
Process costing (including joint products and By-products and inter-process profits) - Operating/Service costing. (Transport & Power House only) - Reconciliation of cost and financial accounts.

Text Books & References:

1. S. N. Maheshwari, S. N. Mittal, 2003, "Cost Accounting - Theory and Problems", Mahavir Book Depot, Twenty First Revised Edition, New Delhi.
2. S.P. Iyengar, 1998, Cost Accounting, Sultan Chand & Sons, New Delhi.
3. Lima Jeremiah Lima, 2004, " Cost Accounting", - Students Manual, NBAA.
4. Horngren, 2003, "Managerial Cost Analysis", Prentice Hall, Twenty Second revised Edition, New Delhi.
5. V.K.Saxena, C.D.Vashist, 2001, Cost Accounting Problems and Solutions, Sultan Chand & Sons, New Delhi.
6. Jain, Narang, 2002, "Cost Accounting", Kalyani Publishers, Chennai.
7. Gowda, J. Made, 2001, "Advanced Cost Accounting", Himalya Publishing House, First Edition, New Delhi.

351 MG 032	PRINCIPLES OF MANAGEMENT	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course is designed to provide students an overview of the management function and its role in organizations and society. It also provides fundamental knowledge and exposure to the concepts, theories and practices in the field of management.

UNIT I

Management – Importance – Definition – Nature and scope of Management process – Role and functions of a Manager – Levels of Management - functions and roles – Management Art or Science – management as a profession – Management approaches - Development of management thought – classical, neo-classical, behavioural, systems and contingency approaches.

UNIT II

Planning – Nature – Importance – Forms – Types – Steps in planning – Objectives – Policies – Procedures – and Methods – Nature and types policies – Decision making – Process of decision making – Types of decision – Problems of involved in decision making.

UNIT III

Organising – Types of Organisation – Organisational structure – Span of Control – Committees – Departmentalisation – Informal Organisation. Authority – Delegation – Decentralisation – Difference between authority and power – Uses of authority – Distinction between Centralization and Decentralisation – Responsibility – Line and Staff relationship.

UNIT IV

Staffing – Sources of recruitment – Selection process – Training – Direction – Nature and Purpose of Directing – Motivation. Nature and Importance of motivation; Types of motivation; Theories of motivation-Maslow, Hertzberg, X, Y and Z; Leadership – meaning and importance; Traits of a leader; Leadership Styles – Likert's Systems of Management, Tannenbaum & Schmidt Model and Managerial Grid.

UNIT V

Co-Ordination – Need for co-ordination – Types – Techniques – Distinction between Co-Ordination and Co Operation – Requisites for excellent Co-Ordination – Systems Approaches and Co-ordination – Controlling – Meaning and importance of Controls – Control Process. Nature and Scope of control; Types of Control; Control process; Control techniques – traditional and modern; Effective Control System.

Text Books & References:

1. Stoner, Freeman, Jr. Gilbert, 2003, “Management”, Prentice Hall of India, New Delhi.
2. C. B. Gupta, 2003, “Management Concepts and Practices”, Sultan Chand and Sons, New Delhi.
3. Scott, Thomas, 2003, “Management: Competing in the New Era”,Tata McGraw Hill, New Delhi.
4 P. C. Tripathy, P. N. Reddy, 2001, “Principles of Management”, Himalaya Publishers.
5 B. S. Moshal, 2001, “Management: Theory and Practice”, Galgotia Publishing Co.
6 Stephen, P. Robbins, Mary Coulter, 2001, “Management”, Pearson Education, New Delhi.
7 Harold, Koontz, Weirich, 2001, “Management”, Tata McGraw Hill Publishing Company, New Delhi.

351 MG 033	TOTAL QUALITY MANAGEMENT	L	T	P	Credits	Total Marks
		3	1	-	12	100

Course Objective:

The course provides the students to understand the Total Quality Management concept and principles and the various tools available to achieve Total Quality Management, to understand the statistical approach for quality control and to create an awareness about the ISO and QS certification process and its need for the industries.

UNIT I Quality Principles

Definition of Quality, Dimensions of Quality, Quality Planning, Quality costs - Analysis Techniques for Quality Costs, Basic concepts of Total Quality Management, Historical Review, Principles of TQM, Leadership – Concepts, Role of Senior Management, Quality Council, Quality Statements, Strategic Planning, Deming Philosophy, Barriers to TQM Implementation.

UNIT II TQM Principles:

Customer satisfaction – Customer Perception of Quality, Customer Complaints, Service Quality, Customer Retention, Employee Involvement – Motivation, Empowerment, Teams, Recognition and Reward, Performance Appraisal, Benefits, Continuous Process Improvement – Juran Trilogy, PDSA Cycle, 5S, Kaizen, Supplier Partnership – Partnering, sourcing, Supplier Selection, Supplier Rating, Relationship Development, Performance Measures – Basic Concepts, Strategy, Performance Measure.

UNIT III Statistical Process Control (SPC):

The seven tools of quality, Statistical Fundamentals – Measures of central Tendency and Dispersion, Population and Sample, Normal Curve, Control Charts for variables and attributes, Process capability, Concept of six sigma, New seven Management tools.

UNIT IV TQM Tools

Benchmarking – Reasons to Benchmark, Benchmarking Process, Quality Function Deployment (QFD) – House of Quality, QFD Process, Benefits, Taguchi Quality Loss Function, Total Productive Maintenance (TPM) – Concept, Improvement Needs, FMEA – Stages of FMEA.

UNIT V Quality Systems

Need for ISO 9000 and Other Quality Systems, ISO 9000:2000 Quality System – Elements, Implementation of Quality System, Documentation, Quality Auditing, TS 16949, ISO 14000 – Concept, Requirements and Benefits.

Text Books & References:

1. Dale H.Besterfiled, et al., 2004, Total Quality Management, Pearson Education, Inc..
2. James R.Evans & William M.Lidsay, 2005, The Management and Control of Quality, (5^{th} Edition),South-Western (Thomson Learning).
3. Feigenbaum.A.V., 2003, "Total Quality Management, McGraw-Hill.
4. Oakland.J.S., 2008 , "Total Quality Management Butterworth, Hcinemann Ltd., Oxford.
5. Narayana V. and Sreenivasan, N.S., 2006, Quality Management – Concepts and Tasks, New Age International.