BACHELOR OF COMPUTER APPLICATIONS

CHOICE BASED CREDIT SYSTEM (CBCS)
Syllabus for 2018-2019Batch onwards

		Semester wise Papers					
Subject code	**FC/Core Allied**	**Paper Title**	**Lect. /Lab Hrs**	**Credit**	**IM**	**EM**	**Max Marks**
I Semester							
UAF1C	FC	Tamil – I	4	3	25	75	100
UKF1B	FC	English – I	4	3	25	75	100
UZF1A	Allied	Mathematics – I	9	5	25	75	100
18UMM1A	C – I	Digital Electronics and Microprocessors	5	4	25	75	100
18UMM11	CL- I	Digital Electronics and Microprocessors lab	4	4	40	60	100
18UMN11	NME– I	Computer Applications for office Automation Tools Lab	2	2	40	60	100
17USS1A	SBE-I	Essentials of Language and Communication	2	2	40	60	100
		Total	30	23			700
II Semester							
UAF2C	FC	Tamil – II	4	3	25	75	100
17UBF2A	FC	English – II	4	3	25	75	100
17UGA2D	Allied	Mathematics – II	9	5	25	75	100
18UMM2A	C – II	Programming in C	5	4	25	75	100
18UMM21	CL – II	Programming in C Lab	4	4	40	60	100
18UMN2A	NME-II	Analytical Skills and Aptitude	2	2	25	75	100
17USS2A	SBE-II	SBE – Essentials of Spoken and Presentation Skills	2	2	40	60	100
		Total	30	23			700
III Semester							
18UMM3A	C-III	Data Structures And Algorithms	9	3	25	75	100
18UMM3B	C-IV	Programming in C++	4	4	25	75	100
18UMM3C	C-V	Computer Graphics	5	3	25	75	100
18UMM3D	C-VI	Statistical and Numerical Methods	4	3	25	75	100
18UMA3A	Allied	Financial Accounting	6	4	25	75	100
18UMM31	CL-III	Programming in C++ and Data Structures Lab	2	4	40	60	100
17USS3A	SBE– III	Personality Enrichment	2	2	40	60	100
		Total	30	23			700

IV Semester							
18UMM4A	C-VII	Programming in Java	5	4	25	75	100
18UMM4B	C-VIII	Multimedia Systems	5	4	25	75	100
18UMA4A	Allied	Cost and Management Accounting	6	4	25	75	100
18UMM41	CL-IV	Programming in Java Lab	5	4	40	60	100
18UMM42	CL-V	Multimedia Systems Lab	5	4	40	60	100
18USS4F	SBE-IV	Internet concepts and HTML	2	2	40	60	100
17UEN4J	EVS	Environmental studies	2	2	25	75	100
		Total	30	24			700
V Semester							
18UMM5A	C – IX	Visual Programming	5	4	25	75	100
18UMM5B	C –X	RDBMS and Oracle	5	4	25	75	100
18UMM5C	C – XI	Operating Systems	5	3	25	75	100
18UME5A	Elective	Elective – I	5	4	25	75	100
18UMM51	CL – VI	DBMS Lab	5	3	40	60	100
18UMM5D	C-XII	Software Engineering	3	3	25	75	100
VED5P	VE	Value Education	2	2	25	75	100
		Total	30	23			700
VI Semester							
18UMM6A	C – XIII	Data Communication and Networking	5	3	25	75	100
18UMM8B	C – XIV	Web Applications	5	4	25	75	100
18UME6A	Elective	Elective-II	5	4	25	75	100
18UME6B	Elective	Elective – III	5	4	25	75	100
18UMM61	CL – VII	Web Applications Lab	4	4	40	60	100
18UMM62	CL – VIII	Mini Project	6	4	40	60	100
	EXT	Extension Activities (NSS/ NCC/ SPORTS)	*	1	*	*	*
		Total	30	24			600
		Total Credits and Marks	**180**	**140**			**4100**

Elective I

1.Object Oriented Analysis And Design

2.Distributed Computing

3.Design and Analysis of Algorithms

Elective II

1.Data Mining

2.Cloud Computing

3.Decision Support System

Elective III

1.Open Source Technology

2.Client/Server Computing

3.Enterprise Resource Planning

The department of Computer Applications will offer the following skill based elective courses.

For B.C.A

1.Computer Applications for Office Automation Lab

2.Internet Concepts and HTML

For other UG students

1.Computer basics and Office Automation

SEMESTER – I

Title of the Course/Paper	**CORE - I** **Digital Electronics and Microprocessors**		
Major Theory	**I Year & I Semester**	**Credit: 4**	
Objective of the Course	This course introduces the concepts of fundamentals of Digital Electronics and Microprocessors.		
Course Outline	**Unit I**: **Number Systems** -Decimal, Binary, Octal, Hexadecimal and their inter conversions, - Binary Arithmetic -1's complement, 2's complement and 9's complement. Binary codes - BCD, Excess-3, Graycode. **Boolean Algebra** : Boolean Laws - Simplification of Boolean Functions - Logic gates and Truth Table – Universal Gates (NAND and NOR) - The K-map method up to five variables, don't care conditions, POS & SOP forms.		
	Unit II: Combinational Logic: Half/Full adder/subtractor , code conversion, Multiplexers, demultiplexers, encoders, decoders, Combinational design using MUX & DEMUX. BCD adder, magnitude comparator. **Sequential logic**: Flip flops (RS, Clocked RS, D, JK, JK Master Slave)-Counters & types Synchronous and Asynchronous counters- Registers, Shift registers and their types.		
	Unit III: Introduction to Microprocessors, Microcomputers, and Assembly Language – Microprocessor Architecture and Its Operations – Introduction to 8085 MPU – Classification of 8085 Instruction set (8-bit, 16 bit, memory related) – Addressing Modes - Writing Assembly Language Programs – Dynamic Debugging.		
	Unit IV: Programming Techniques such as looping, Counting and indexing, basics of Counter and Time Delay – Stack – Subroutines - Conditional call and return instructions.		
	Unit V: 8085 Interrupt – Types of Interrupts – Memory – Types of Memory - Interfacing I/O Devices: Basic Interfacing Concepts – Direct I/O - Memory-Mapped I/O – DMA.		

Text Books:

1) M. Morris Mano, "Digital Logic and Computer Design", Prentice-Hall of India Pvt. Ltd.
2) Ramesh S. Gaonkar, "Microprocessor Architecture, Programming", and Applications with the 8085, Penram International Publishing (India) Pvt. Ltd.

Reference Books:

1) D. P. Leach and A. P. Malvino, "Digital Principles and Applications", Tata McGraw, Hill Publishing Co. Ltd.
2) V. Vijayendran, "Digital Fundamentals",S. Viswanathan (Printers & Publishers) Pvt. Ltd.
3) N. K. Srinath, "8085 Microprocessor Programming and Interfacing",Prentice-Hall of India Pvt. Ltd.

Title of the Course/ Paper	**CORE PRACTICAL - I Digital Electronics and Microprocessors Lab**		
Major Practical	**I Year & I Semester**	**Credit: 4**	

Objective of the Course	This course gives training on the experiments of Digital Electronics and Microprocessor 8085.
Course Outline	**DIGITAL ELECTRONICS** 1. Verification of Truth Table for AND, OR, NOT, NAND, NOR and EX-OR gates. 2. Realization of NOT, AND, OR, EX-OR gates with only NAND and only NOR gates. 3. Karnaugh Map Reduction and Logic Circuit Implementation. 4. Verification of Demorgan's Law. 5. Implementation of Half-Adder and Half-Subtractor. 6. Implementation of Full-Adder and Full-Subtractor. **MICROPROCESSORS** 1. 8-bit Addition 2. 8-bit Subtraction 3. 16-bit Addition 4. BCD Addition. 5. BCD Subtraction. 6. 8-bit Multiplication. 7. BCD Multiplication. 8. Searching for an Element in an Array. 9. Sorting in Ascending Order. 10. Sorting in Descending Order. 11. Reversing Array Elements. 12. Block Move. 13. Binary to ASCII Conversion. 14. BCD to ASCII Conversion.

Title of the Course/Paper	**NME- I COMPUTER APPLICATIONS FOR OFFICE AUTOMATION LAB**		
Non-Major Elective	**I Year & I Semester**	**Credit: 2**	
Objective of the Course	This course gives an introduction to computer and Office automation software.		
Course Outline	**Unit I :** Introductory concepts: History - Generation - Classification Block diagram - Memory units – Types of storage devices – Input devices –Output Devices- Operating systems – Types of Operating Systems – Data Base management Systems - Types of Programming Languages – Algorithms – Flow Chart – Flow Chart Symbols – Simple Programs - Even or Odd – Fahrenheit to Celsius Conversion – Area of a Square – Area of a Rectangle – Simple Interest.		
	Unit II : MS-Word: Creating a document – Copying and moving text – Formatting the document (Font, Paragraph, Bullets & Numbering, Page Setup) - Inserting Page breaks – Page Numbers – Pictures – Application of Header & Foote - Creating Tables – Entering Text – Formatting table – Usage of Formulas -Mail Merge – Letter – label – Envelope.		
	Unit III : Ms-Excel: Creating of Excel sheet, Cell Editing, Usage of Formulae and Built-in Functions, File Manipulations, Data Sorting (both number and alphabets), Worksheet Preparation, Drawing Graphs, Usage of Auto Formatting – Filters.		
	Unit IV : Ms- PowerPoint : Creating Presentations - Selecting slide layout – Inserting new slide – Formatting Presentation(Change font type, font color, font size, style of text , Bullet and numbering, Slide design, layout, change background) -Preparing Slide Show - Inserting Clip arts and Pictures - Frame Movements - Preparation of Organization Charts - Presentation using Wizards - Usage of Design Templates -Working with Tables, Graphics and Animation.		
	UNIT V : MS-Access: Introduction – Parts of an Window: - Creating a New Data Base – Table Wizard – Renaming– Saving the Database –Relationships – Query – Form – Reports – Exiting MS-Access.		

Text Book:

1. Alexis Leon and Mathews Leon, "Fundamentals of Information Technology", Vikas,

2. Sanjay Saxena, "MS-Office 2000 for everyone", Vikas Publishing House Pvt. Ltd, Reprint 2006

Reference Books:

1. Willams, Sawyer and Hutchinson, "Using Information Technology", Tata McGraw Hill.
2. Ananthi Sheshasaayee and G. Sheshsaayee. "Programming Languages with Practicals", Margham Publications.
3. Nellai Kannan, "MS-Office", Nels Publications, 3rd Edition, 2004.
4. John Walkenbach, Herb Tyson, Michael R.Groh, Faithe Wempen and Lisa A.Bucki , " MicrosoftOffice 2010 Bible ", Wiley India Pvt. Ltd , Reprint 2010

SEMESTER – II

Title of the Course/Paper	**CORE–II**	**PROGRAMMING IN C**	
Major Theory	**I Year & II Semester**	**Credit: 4**	
Objective of the Course	This course provides students with a comprehensive study of C Programming language.		
Course Outline	**Unit I:** C fundamentals Character set - Identifier and keywords - data types - constants - Variables - Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical, Assignment and Conditional Operators - Library functions.		
	Unit II: Data input and 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 - Proto-types - 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 - Operation in Pointers - Arrays of Pointers - Structures and Pointers - Sorting basics - Files : Creating , Processing ,Opening and Closing a data file, Command Line Arguments – Macros – Preprocessor – Basics of Graphics.		

Text Book:

E.Balaguruswamy, “Programming in ANSI C”, TMH Publishing Company Ltd.

Reference Books:

1) B.W. Kernighan and D.M.Ritchie, “The C Programming Language”, PHI.
2) H. Schildt, C, The Complete Reference, TMH
3) Gottfried,B.S, ”Programming with C, TMH Pub. Co. Ltd., New Delhi.
4) Kanetkar Y., “Let us C”, BPB Pub., New Delhi.

Title of the Course/Paper	**CORE PRACTICAL– II PROGRAMMING IN C LAB**		
Major Practical	**I Year &II Semester**	**Credit: 4**	
Objective of the Course	This course deals with the practical implementation of C concepts to solve the problems.		
Course Outline	1. Write a Program to Print the size of all the data types with its modifiers supported by C and its range. 2. Write a Program to accept three numbers and find the largest and second largest among them. 3. Write a Program to print all prime numbers between any 2 given limits. 4. Write a Program to print all the Armstrong numbers between any 2 given limits. 5. Write a Program to count the number of vowels, Consonants, Words, White Spaces in a line of text using Switch Statement 6. Write a Program to Perform Matrix Addition and Subtraction. 7. Write a Program to Perform Matrix Multiplication. 8. Write a Program to check whether a String is a Palindrome. 9. Write a Program to find the roots of a quadratic equation using functions. 10. Write a recursive program to find the factorial of a number. 11. Write a Program to sort the given numbers in ascending order. 12. Write a function to swap two numbers using pointers. 13. Create a file and store some records in it. 14. Write a Program to include your own header file. 15. Write a Program to draw a circle.		

Title of the Course/Paper	**NME– II ANALYTICAL SKILLS AND APTITUDE**		
Non Major Elective	**I Year & II Semester**	**Credit: 2**	
Objective of the Course	This course helps students to develop their analytical and aptitude skills.		
Course Outline	**Unit I:** Arithmetic ability-problems in numbers-fractions-root.		
	Unit II: Basic formulae and problems on boats and streams, simple interest, compound interest.		
	Unit III : Permutations and Combinations-simple problems		
	Unit IV : Odd man out series		
	Unit V: Data interpretation-bar graphs, pie charts and line graphs		

Recommended Text:

1. Quantitative aptitude for competitive exams – R.S.Agarwal.

SEMESTER – III

Title of the Course/Paper	**CORE –III DATA STRUCTURES AND ALGORITHMS**		
Major Theory	**II Year & Third Semester**	**Credit: 3**	
Objective of the Course	This course introduces the basic concepts of Data Structures and algorithms.		
Course Outline	**Unit I :** Definition of a Data structure - Primitive and Composite Data Types - Algorithms - Top-Down and Bottom- up approaches to algorithm design - Use of algorithms in problem solving - Efficiency analysis of algorithms: Space, Time complexity, and Frequency count - Asymptotic notations - Arrays - Operations on Arrays - Order lists.		
	Unit II: Stacks - Applications of Stack - Infix to Postfix Conversion, Recursion, Maze Problems - Queues - Operations on Queues– De-Queue – Priority Queue -- Queue Applications - Circular Queue.		
	Unit III: Singly Linked List - Operations, Application - Representation of a Polynomial, Polynomial Addition; Doubly Linked List – Operations.		
	Unit IV: Trees –Introduction – Terminology - Representation of Trees Binary Trees –Abstract data type – Properties of Binary Trees - Binary Tree Traversals - Binary Search Trees: Introduction, Searching a Binary Search Tree, Inserting an Element, Deleting an Element, Height of Binary Search Tree – Forest.		
	Unit V : Graphs – Definition - Types of Graphs – Representation of Graphs – Graph Traversal - Shortest Path - Dijkstra's Algorithm - HashingTables and Functions –Introduction to Sorting Techniques – Introduction to various Sorting Methods : Insertion Sort - Selection sort – Bubble sort – Quick sort – Merge sort –Heap sort. Searching – Basics of Linear Searching and Binary Searching.		

Recommended Text

1. E.Horowitz and S.Shani Fundamentals of Data Structures in C++, Galgotia Pub. 1999.
2. Data Structures, Seymour Lipschutz, Mc Graw Hill Education(India) Pvt., Ltd.,

Reference Books

1. Horowitz, S. Sahni, and S. Rajasekaran, Computer Algorithms, Galgotia Pub. Pvt. Ltd., 1998.
2. R. Kruse C.L. Tondo and B. Leung, Data Structures and Program design in C, PFU, 1997.

Title of the Course/ Paper	**CORE –IV**	**PROGRAMMING IN C++**	
Major Theory	**II Year & III Semester**	**Credit: 4**	
Objective of the Course	This course aims in developing the object oriented Programming Skills using C++.		
Course Outline	**Unit I:** Principles of Object Oriented Programming (OOP) - Software evaluation - OOP paradigm-basic concepts of OOP –benefits of OOP-application of OOP.		
	Unit II: Introduction to C++- Tokens – Keywords- Identifiers – Variables – Operators – Manipulators- Expressions and Control Structures – Pointers – Functions- Function Prototyping Parameters-Passing in functions- Values return by functions- Inline functions-Friend and Virtual Functions		
	Unit III: Classes and Objects- Constructors and Destructors-Operator Overloading – Type conversions- Types of Constructors –Function Overloading.		
	Unit IV: Inheritance- Types of inheritance- Virtual functions and Polymorphism Constructors in Inheritance – Mapping Console I/O Operations.		
	Unit V : Files- File streams- File operations- File Pointer- Error handling during file operations- Command Line Arguments.		

Recommended Text

1. E.Balaguruswamy – Object Oriented Programming with C++, TMH
2. Robert Lafore – Object Oriented Programming in Microsoft C++, Galgotia.

Title of the Course/ Paper	**CORE - V**	**COMPUTER GRAPHICS**	
Major Theory	**II Year & III Semester**	**Credit: 3**	
Objective of the Course	This course introduces the concepts of Computer Graphics.		
Course Outline	**Unit I:** Introduction to computer Graphics - Video display devices- Raster scan Systems -Random Scan Systems - Interactive input devices - Hard copy devices - Graphics software - Output primitives - line drawing algorithms - initializing lines - line function - circle Generating algorithms.		
	Unit II: Attributes of output Primitives - line attributes - Color and Grayscale style - Area filling algorithms - Character attributes inquiry functions - Two dimensional transformation - Basic transformation - Composite transformation - Matrix representation - other transformations.		
	Unit III: Two - dimensional viewing - window- to view port co-ordinate transformation - clipping algorithms - Interactive input methods - Physical input devices - logical classification of input devices - interactive picture construction methods.		
	Unit IV: Three - dimensional concepts - Three dimensional display methods - parallel Projection - Perspective Projection - Depth Cueing - Visible line and surface identification - Three dimensional transformation.		
	Unit V: Three dimensional viewing - Projection - Viewing transformation - implementation of viewing operations - Hidden surface and Hidden line removal - backface removals.		

Recommended Texts

1. D.Hearn and M.P. Baker, 2005, Computer Graphics , C Version, 2nd Edition , Pearson Education , New Delhi.
2. W.M.Newman and R.F.Sproull, 1997, 2nd Edition ,Principles of Interactive Computer Graphics, Tata McGraw-Hill Publishing Co. Ltd.

Reference Books

1.D.P.Mukherjee, 1999, Fundamentals of Computer Graphics and Multimedia, 1st Edition, Prentice-Hall of India Pvt. Ltd. – 1999.
2. N. Krishnamurthy ,2002, Introduction to Computer Graphics, 1st Edition, Tata McGraw-Hill Publishing Co. Ltd..

Title of the Course/Paper	**CORE –VI STATISTICAL AND NUMERICAL METHODS**		
Major Theory	**II Year & Third Semester**	**Credit: 3**	
Objective of the Course	This course introduces the basic concepts of Statistical and Numerical methods.		
Course Outline	**Unit I :** The Solution of Numerical Algebraic and Transcendental Equations: Bisection Method-Iteration Method-Newton Raphson method. Solution of Simultaneous Linear Algebraic equations: Gauss Elimination Method-Gauss Jordan elimination method-Inversion of matrix using Gauss Elimination Method-Method of Triangularization.		
	Unit II: Numerical Differentiation: Newton's forward difference and Newton's backward difference method. Numerical Integration: Trapezoidal rule- Simpson's one third rule- Simpson's three eighths rule.		
	Unit III: Measures of Averages: Arithmetic mean-Weighted arithmetic mean-Combined mean-Geometric mean- Harmonic mean-Mean-Median-Mode. Measures of Dispersion: Mean Deviation-Standard Deviation. Measures of Skewness-Kurtosis and Moments.		
	Unit IV: Random Variables: Discrete random variables- Continuous random variables-Cumulative Distribution. Mathematical expectations (one dimension only)-Variance simple problems. Distributions: Binomial-Poisson and Normal distribution simple problems.		
	Unit V : Correlation-Correlation Coefficient-Rank Correlation-Regression-Regression lines- Properties of Regression Coefficient (without proof), Simple problems.		

Text Books:

1. P. Kandasamy, k. Thilagavathy and K. Gunavathi : Numerical Methods, 3rd edition, S.Chand publication (Unit I & II)
2. P.R.Vittal and V.Mallini: Statistical And Numerical Methods, Margham publications. (Unit III, IV & V)

Books for Reference:

1. Balaguruswamy E. (1988): Computer Oriented Statistical and Numerical Methods, Macmillan India Ltd.

Title of the Course/Paper	**CORE PRACTICAL – III**		**PROGRAMMING IN C++ USING DATA STRUCTURES**
Major Practical	**II Year & IV Semester**	**Credit: 4**	
Objective of the Course	This course deals with practical implementation of Data Structure using C++.		
Course Outline	1. Implementation of class and objects. 2. Implementation of friend and virtual functions. 3. Usage of constructor and destructor. 4. Arithmetic operator overloading. 5. Implementation of function overloading. 6. Concept of multiple inheritance. 7. Handling of errors. 8. Displaying line numbers. 9. Implementation of stack using array. 10. Implementation of stack using pointers. 11. Implementation of queue using array. 12. Infix to Postfix conversion. 13. Addition of polynomial using array. 14. Binary Tree traversals. 15. Depth first search.		

SEMESTER – IV

Title of the Course/ Paper	**CORE –VII**	**PROGRAMMING IN JAVA**	
Major Theory	**II Year & IV Semester**	**Credit: 4**	
Objective of the Course	This course introduces the concepts of Java Programming.		
Course Outline	**Unit I:** Fundamentals of Object-Oriented Programming: Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming – Application of Object-Oriented Programming. Java Evolution: History – Features – How Java differs from C and C++ – Java and Internet – Java and www –Web Browsers. Overview of Java: simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine.		
	Unit II: Constants, Variables, Data Types - Operators and Expressions – Decision Making and Branching: if, if …else, nested if, switch, ? : Operator - Decision Making and Looping: while, do, for – Jumps in Loops - Labeled Loops – Classes, Objects and Methods.		
	Unit III: Arrays, Strings and Vectors – Interfaces: Multiple Inheritance – Packages: Putting Classes together – Multithreaded Programming.		
	Unit IV: Managing Errors and Exceptions – Applet Programming – Graphics Programming.		
	Unit V: Managing Input / Output Files in Java : Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writing characters, Byte-Handling Primitive data Types – Random Access Files.		

References

1. Programming with Java – A Primer - E. Balagurusamy, 3 rd Edition, TMH.
2. The Complete Reference Java 2 - Patrick Naughton &Hebert Schildt, 3rrd Edition,TMH
3. Programming with Java – John R. Hubbard, 2nd Edition, TMH.

Title of the Course/ Paper	**CORE – VIII**	**MULTIMEDIA SYSTEMS**	
Major Theory	**II Year & IV Semester**	**Credit: 4**	
Objective of the course	This course gives an exposure to Multimedia and its applications.		
Course Outline	**Unit I: PhotoShop :**Photoshop's Environment · Raster and Vector Graphics · Photoshop Environment Elements Navigating in Photoshop Basic photo editing tasks - zooming, cropping, file size reduction ,removing a background, and changing the contrast on part of a picture File Formats -Various pros, cons, and uses of common file formats. Sizing images- How to open and close files -Pasting images –Cropping		
	Unit II : Image Manipulation in Photoshop : Selecting Image Areas · The Rectangular and Elliptical Marquee Tools · The Lasso Tools Saving Selections · The Magic Wand Tool · The Magnetic Lasso Tool · Modifying Selections Blending and Compositing : Defringing · Opacity and Blending Modes · Feathering Edges Image Modes · Mode Characteristics · Grayscale and Bitmap Modes · Color Modes Color and Painting · Selecting Colors · Painting Tools · The Clone Stamp Tool Text, Layer Effects, and Filters: Type Layers · Layer Effects · Filters · Merging and Flattening Layers -Adjusting Images: Brightness/Contrast · Levels Adjustment Layers · Toning Tools · Hue/Saturation Fixing the red eyes.		
	Unit III : Flash Basics & tools: Flash Editor, Panels, Timeline, Tools, Saving & Uploading Files Basic animation -Working in the timeline -Working with symbols Basic Drawing Tools Brush Tool: freehand painting tool. Paint Bucket Tool: fills enclosed areas with colors or gradients. Arrow Tool and Sub selection Tool: Oval and Rectangle Tools: Pen Tool: draws precise shapes point-by-point with adjustable vector curves.		
	Unit IV : Animation with Flash and Publishing : Shape tween staggering animation effect Introduction to Motion Guide - Motion Guide Paths - Mask layers Button - Introduction to scripting -Setting up your project -Publishing movies.		
	Unit V : Web publishing with Dream Weaver : Internet Access and HTML – Planning Web Sites -The Dreamweaver Environment –Viewing and Managing HTML Code Creating a Web Site - Defining a Web Site - Creating a Basic Web Page and Page Properties Building a Web Site The Site Panel and Templates - Adding Content to Web Pages - List Formats and Graphic File Types -Inserting a Table and Adjusting Table Properties - Using Graphics in Table Cells and Nested Tables Using Table Layout View Creating and Using a Repeating Region Template -Working with Links -Creating Internal and External Hyperlinks Creating an Image Map and Anchors - Enhancing Navigation in a Site - Framesets – Reusable Navigation Bars Managing and Uploading a Web Site - The Site Map		

Recommended Text :

1. Flash 5 Bible Robert Reinhardt and Jon Warren Lentx, IDG Books India (p) L td.
2. Adobe flash catalyst cs5 bible , Huddleston
3. Adobe flash cs4 Professional how tos 100 essential techniques
4. Adobe photoshop 6.0 classroom in a book , Adobe
5. Adobe photoshop cs4 bible , Cates and Abrams Moughamiam
6. Adobe Photoshop cs5 bible , Dayly
7. Adobe photoshop cs4 how tos 100 essential techniques , Orwing
8. Adobe Dreamweaver cs bible , Lowery
9. Adobe dreamweaver cs4 how tos essential techniques, Krrlins

Title of the Course/ Paper	**CORE PRACTICAL – IV PROGRAMMING IN JAVA LAB**		
Major Practical	**II Year & IV Semester**	**Credit: 4**	
Objective of the course	This course introduces the concepts of Java Programming in Problem Solving		
Course Outline	1. Write a Java program to extract a portion of a character string and print the extracted string. 2. Write a Java Program to implement the concept of multiple inheritances using interface. 3. Write a java program to create an Exception called payout-of-bounds and throw the exception. 4. Write a program to implement the concept of multi threading with the use of any three multiplication tables and assign three different priorities to them. 5. Write a java program to draw several shapes in the crated windows. 6. , Write a java program to create a frame with four text fields as name, street, city and pin code with suitable tables. Also add a button called "mu details", When the button is clicked its corresponding values are to be appeared in the text fields. 7. Write a java program to crate a menu bars and pull down menus. 8. Write a java program which open an existing file and append text to that file.		

Title of the Course/ Paper	**CORE PRACTICAL – V MULTIMEDIA SYSTEMS LAB**		
Major Practical	**II Year & IV Semester**	**Credit: 4**	
Objective of the course	This course provides the implementation of Multimedia Concepts.		
Course outline	**Photoshop** 1. Create CD cover 2. Create text and display in various format (shadow, emboss effects) 3. Convert a color picture to black and white image 4. Modify a picture using selection tools 5. Given a picture of a flower with a background. Extract the flower and organize on a different background 6. Given a picture. Adjust the brightness and contrast of the picture to give a better look. 7. Display the given picture through your name using mask. **Flash** 8. Create a motion tween and shape tween 9. Create an animation to represent a growing moon using frame by frame animation 10. Create an animation to bounce a ball on steps. 11. Simulate movement of a cloud 12. Draw the blades of a fan and make it work by giving proper animate 13. Create a guided motion tween 14. Create a spinning oval 15. Create a flash application to scroll text within a text box. 16. Create a fade in, fade out object using flash 17. Create a zoom animation and ripple effect 18. Mask a photo 19. Create a button using flash 20. Create an action script to execute for a event in a flash application		

Title of the Course/Paper	**SBE - IV** **INTERNET CONCEPTS AND HTML**		
Skill Based Major Elective	**II Year & IV Semester**	**Credit: 2**	
Objective of the Course	This course helps students to develop their knowledge in Internet concepts and Web Page Designing.		
Course Outline	**UNIT I:** Introduction to the internet – internet technologies - internet browsers- Accessing the Internet - Types of access - Internet Services providers. Email - Parts of email - Email software - Web based email - Email address – List Servers – Newsgroups -Newsgroups names - Newsgroups readers - Chat rooms -Conferencing		
	Unit II: Internet Resources – Games - File Transfer Protocol –Telnet - World Wide Web -S Online services.		
	Unit III: Introduction to HTML – Head and body sections – Designing the body section.		
	Unit IV: Ordered and Unordered lists – table handling – DHTML and style sheets		
	Unit V: Frames – A web page design Project – Forms.		

References :

1. World Wide Web Design with HTML , C. Xavier.
2. A complete guide to internet and web programming , Shah
3. Rohit Khurana , "COMPUTER FUNDAMENTALS and INTERNET BASICS", SSAph Publishing Corporation, 2010.

SEMESTER –V

Title of the Course/ Paper	**CORE – IX VISUAL PROGRAMMING**		
Major Theory	**III Year &V Semester**	**Credit: 4**	
Objective of the course	To inculcate knowledge on Visual Basic concepts and Programming.		
Course Outline	**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 - Conditionals - 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.		

1. Recommended Texts

1. Gary Cornell - Visual Basic 6 from the Ground up - Tata McGraw Hill - 1999.
2. Noel Jerke - Visual Basic 6 (The Complete Reference) - Tata McGraw Hill – 1999

Title of the Course/ Paper	**CORE – X RDBMS AND ORACLE**		
Major Theory	**III Year & V Semester**	**Credit: 4**	
Objective of the course	To course introduces the concepts of RDBMS and ORACLE.		
Course Outline	**Unit I:** Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – De-normalization – Another Example of Normalization.		
	Unit II: Oracle9*i*: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - SQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.		
	Unit III : Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions – Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.		
	Unit IV: PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.		
	Unit V: PL/SQL Composite Data Types: Records – Tables – arrays. Named Blocks: Procedures – Functions – Packages –Triggers –Data Dictionary Views.		

References*:*

1. Database Systems using Oracle – Nilesh Shah, 2nd edition, PHI.
(UNIT-I: Chapters 1 & 2 UNIT-II: Chapters 3 & 4 UNIT III: Chapters 5 & 6
UNIT-IV: Chapters 10 & 11 UNIT-V: Chapters 12,13 & 14*)*
2. Database Management Systems – Arun Majumdar & Pritimoy Bhattacharya, 2007, TMH.
3 Database Management Systems – Gerald V. Post, 3rd edition, TMH

Title of the Course/Paper	**CORE-XI**	**OPERATING SYSTEMS**	
Major Theory	**III Year & V Semester**	**Credit: 3**	
Objective of the course	This course introduces the functions of operating systems.		
Course Outline	**Unit I:** Introduction: Views –Goals –Types of system – OS Structure – Components – Services - System Structures – Layered Approach -Virtual Machines - System Design and Implementation. Process Management: Process - Process Scheduling – Cooperating Process –Threads - Interprocesses Communication. CPU Scheduling : CPU Schedulers – Scheduling criteria – Scheduling Algorithms		
	Unit II : Process Synchronization: Critical-Section problem - Synchronization Hardware – Semaphores – Classic Problems of Synchronization – Critical Region – Monitors. Deadlock: Characterization – Methods for handling Deadlocks – Prevention, Avoidance, and Detection of Deadlock - Recovery from deadlock.		
	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: Concepts – Access methods – Directory Structure –Protection Consistency Semantics – File System Structures – Allocation methods – Free Space Management.		
	Unit V: I/O Systems: Overview - I/O Hardware – Application 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..		

Recommended Texts

1. Silberschatz A., Galvin P.B., Gange,. 2002 , Operating System Principles ,Sixth Edition, John Wiley & Sons.

Reference Books

1. H.M. Deitel , 1990, An Introduction to Operating System,- Second Edition, Addison Wesley

Title of the Course/ Paper	**CORE -XII SOFTWARE ENGINEERING**		
Major Theory	**III Year &V Semester**	**Credit: 3**	
Objective of the course	This course introduces the concepts of Life Cycle of Software		
Course Outline	**Unit I :** Introduction to Software Engineering Some definition – Some size factors – Quality and productivity factors – Managerial issue. 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 – specification techniques – level estimation – estimating software maintenance costs.		
	Unit III : Software requirements definition: The software requirements specification – formal languages and processors for requirements specification.		
	Unit IV : Software Design: Fundamental Design concepts – Modules and modularizing Criteria – Design Notations – Design Techniques – Detailed Design Consideration – Real time and distributed system design – Test plan – Mile stones walk through and inspection – Design guide lines		
	Unit V : Verification and validation techniques: Quality assurance – Static analysis – symbolic exception – Unit testing and Debugging – System testing – Formal verification. Software maintenance: Enhancing maintainability during development – Managua aspects of software maintenance – Configuration management – source code metrics – other maintenance tools and techniques.		

Recommended Texts

1.Richard E.Fairly - Software Engineering Concepts - Tata McGraw-Hill book

Company.

Reference Books

1. R.S.Pressman, 1997, Software Engineering – 1997 - Fourth Ed., McGraw Hill.

2. Rajib Mall , 2004, Fundamentals of Software Engineering, 2nd Edition, PHI.

Title of the Course/ Paper	**CORE PRACTICAL – VI DBMS LAB**		
Major Practical	**III Year & V Semester**	**Credit: 3**	
Objective of the course	This course gives an exposure to visual programming using Visual Basic software.		
Course Outline	Creation of a Database and performing the operations given below using a Menu Driven Program. a) insertion b)Deletion c) Modification d) Generating a Simple report for the following: 1. Payroll 2. Mark sheet Processing 3. Saving Bank account for banking 4. Inventory System 5. Invoice system 6. Library information system 7. Student information system 8. Income tax processing system		

ELECTIVE – I

Title of the Course/ Paper	**ELECTIVE - I OBJECT ORIENTED ANALYSIS AND DESIGN**		
Elective	**III Year & V Semester**	**Credit: 4**	
Objective of the course	This course introduces to UML, object oriented analysis and design of any application		
Course Outline	**Unit I:** System Development - Object Basics - Development Life Cycle - Methodologies - Patterns - Frameworks - Unified Approach.		
	Unit II: Use-Case Models - Object Analysis - Object relations - Attributes - Methods - Class and Object responsibilities.		
	Unit III: Design Processes - Design Axioms - Class Design - Object Storage - Object Interoperability.		
	Unit IV: User Interface Design - View layer Classes - Micro-Level Processes - View Layer Interface - UML.		
	Unit V: Quality Assurance Tests - Testing Strategies - Object orientation on testing - Test Cases - test Plans - Continuous testing - Debugging Principles - System Usability - Measuring User Satisfaction.		

Recommended Texts

1. Ali Bahrami - Object Oriented Systems Development - McGraw Hill International Edition - 1999.
2. Grady Booch- Object Oriented Analysis and design –Addison Wesley.

Title of the Course/ Paper	**ELECTIVE -I DISTRIBUTED COMPUTING**		
Elective	**III Year & V Semester**	**Credit: 4**	
Objective of the course	This course introduces the concepts of Distributed databases and Distributed File system and its Hardware concepts.		
Course Outline	**Unit 1:** Distributed data base – Security and Integrity – New Data base application – Design of data bases – Knowledge based case studies for relational network and hierarchical systems. Distributed processing – Models for distributed computing – Load balancing – Remote procedure calls – process migration – concurrency issues on data bases.		
	Unit 2: Hardware concepts – Switched multiprocessor, Bus based multicomputer, Switched multicomputer – Software concepts – Network operating systems and NFS – Time distributed systems.- Design Issues : Transparency – Flexibility – Reliability – performance and scalability.		
	Unit 3: Communications in distributed systems – The client – server model, Blocking vs Un-buffered primitives - Implementation of client-server model.		
	Unit 4: Synchronization in distributed systems – Clock synchronization – Mutual exclusion – Election algorithms – Atomic transactions – Deadlocks in distributed system – Threads – Thread usage and Implementation of thread packages – processor allocation.		
	Unit 5 : Distributed File system : File service interface – semantics of the file sharing – Distributed file system – Implementation of new trends in distributed file systems.		

Recommended Texts

1. A.S Tanenbaum, " Modern Operating Systems " , Pearson Education

Reference Books

1. James Martin, " Computer Networks and Distributed Processing, Software Techniques and Architectures", Pearson Education.

Title of the Course/ Paper	**ELECTIVE I DESIGN AND ANALYSIS OF ALGORITHMS**		
Elective	**III Year & V Semester**	**Credit: 4**	
Objective of the course	This course introduces the concepts of design and analysis of algorithms		
Course Outline	**Unit I :** Introduction– Performance analysis-asymptotic notation-divide and conquer: general method-finding minimum and maximum-quick sort-selection.		
	Unit II: Greedy method: General method-Knapsack problem-minimum cost spanning tree –prim's algorithm Kruskal algorithm-single source shortest path.		
	Unit III: Dynamic programming: Principle of optimality-multistage graph-travelling salesperson problem-string editing.		
	Unit IV: Basic traversal and search techniques: techniques for binary trees-techniques for graphs-BFS-DFS-Bi connected components and DFS.		
	Unit V: Back tracking : General method-8 queens problem-sum of subsets-graph coloring-Hamiltonian cycles.		

References:

1. E.Horowitz,S.Sahni and S.Rajasekeran. Computer Algorithms C++, Galgotia , 1999.

SEMESTER VI

Title of the Course/Paper	**CORE - XIII DATA COMMUNICATION AND NETWORKING**		
Major Theory	**III Year & VI Semester**	**Credit: 3**	
Objective of the course	This course introduces the concepts of Data Communication and Networking		
Course Outline	**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 802 - Ethernet - Token Bus - Token Ring - FDDI - IEEE 802.6 - 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.		

Recommended Texts

1. Behrouz and Forouzan,2001,Introduction to Data Communication and Networking, 2nd Edition, TMH.

Reference Books

1. Jean Walrand 1998,Communication Networks (A first Course),Second Edition, WCB/McGraw Hill.
2. Behrouz and Forouzan, 2006, Data Communication and Networking, 3nd Edition, TMH.

Title of the Course/Paper	**CORE-XIV** **WEB APPLICATIONS**	
Major Theory	**III Year &VI Semester**	**Credit: 4**
Objective of the course	This course introduces the concepts of ASP, VB Script, Java Script.	
Course Outline	**Unit I :** Introduction to VBScript - Adding VBScript Code to an HTML Page - VB Script Basics - VBScript Data Types - VBScript Variables - VBScript Constants - VBScript Operators – mathematical- comparison-logical - Using Conditional Statements - Looping Through Code - VBScript Procedures – type casting variables - math functions –date functions – string functions –other functions - VBScript Coding Conventions - Dictionary Object in VBScript - Err Object	
	Unit II : Introduction to Javascript – Advantages of Javascript – Javascript syntax - Data type –Variable - Array – Operator & Expression – Looping – control structures - Constructor Function – user defined function Dialog Box .	
	Unit III : Javascript document object model – Introduction – Object in HTML – Event Handling – Window object – Document object – Browser object – Form object – Navigator object – Screen object – Build in object – User defined object – Cookies.	
	Unit IV : ASP.NET Language Structure – Page Structure – Page event , Properties & Compiler Directives . HTML server controls – Anchor, Tables, Forms, Files . Basic Web server Controls – Label, Text box, 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	

Recommended Texts

1. I.Bayross, 2000, Web Enable Commercial Application Development Using HTML, DHTML, Javascript, Perl CGI, BPB Publications.
2. A.Russell Jones, Mastering Active Server Pages 3, BPB Publications.

Reference Books

1. J.Jaworski, 1999, Mastering Javascript, BPB Publications.
2. Powell, Thomas; Schneider, Fritz, **JavaScript: The Complete Reference, 2nd edition** 2004, TMH.

Title of the Course/ Paper	**CORE PRACTICAL – VII WEB APPLICATION LAB**		
Major Practical	**III Year & VI Semester**	**Credit: 4**	
Objective of the course	This course gives training in web design and applications.		
Course Outline	**VB SCRIPT & JAVASCRIPT** 1. Write a program outputs the squares, roots, cubes and complements of integers between 1 and 100. 2. Create a calculator. 3. Write a script to Sort numbers and strings 4. Create a program to generate a hit counter 5. Create a program to verify whether email address provided by user is valid or invalid. 6. Write a program to scroll the text on status bar. 7. The form consists of two multiple choice list and one single choice list a. the first multiple choice list display the major dishes available. b. the second Multiple choice list display the stocks available. c. The single choice list display the miscellaneous (Milkshakes, soft drinks, softy available etc.) 8. Write a script to create a digital clock. 9. Create a web page using two image file which switch black and white one another as the mouse pointer moves over the image. Use the On Mouse over and On Mouse event, on Dbl click handler. 10. Build a WWW page with an image and 3 buttons., Pick three favorite graphics, Label the buttons and make each one swap in the graphic you have chosen 11. Create a frameset that has two frames, side by side. Make the left-hand frame contain a form with 3 radio buttons The buttons should be for three search engines: • Yahoo (http://www.yahoo.com) • Altavista (http://www.altavista.com) • Infoseek (http://www.infoseek.com) When the user clicks on of the option buttons, the frame on the right hand side should be loaded with the right search engine. 12. Write a program to implement Employee database with all validation		

	ASP 1. Create a login form, to expire, if the user does not type the password within 100 seconds 2. Create an employee database and manipulate the records using command object in ASP 3. Develop an application to illustrate the usage of Request and Response Objects in ASP. 4. Write an ASP program using Request Object to give the exact list of headers sent by the browser to the Web server. 5. Create an Active Server Page to display the records one by one from a student database. The student database should contain roll no, name, marks & total. 7. Design an ASP application that describes books in the Online Bookshop.(Use AD Rotator Component, Content Rotator Component, Content Linking Component) 8. 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). 9. Create a document, which opens a new window without a toolbar, address bar, or a status bar that unloads itself after one minute. 10. 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.

ELECTIVE II

Title of the Course/ Paper	**ELECTIVE- II DATA MINING**		
Elective	**III Year & VI Semester**	**Credit: 4**	
Objective of the course	This course introduces the fundamentals of data mining.		
Course Outline	**Unit I: Introduction**: Data mining-functionalities –classification-introduction to data warehousing data preprocessing: preprocessing the data-data cleaning-data integration and transformation-data reduction		
	Unit II: Data mining, primitives, languages and system architecture: data mining-primitives-data mining query language, architecture of data mining system. concept description, characterization and comparison: concept description, data generalization and summarization, analytical characterization, mining class comparison-statistical measures.		
	Unit III: Mining association rules: basic concepts-single dimensional Boolean association rules from transaction databases, multilevel association rules from transaction databases-multi-dimension association rules from relational database and data warehouse.		
	Unit IV: Classification and prediction: introduction-issues-decision tree induction-bayesian classification-classification of back propagation. classification based on concepts from association rule mining-other methods. prediction-introduction-classifier accuracy.		
	Unit V: Cluster analysis: introduction-types of data in cluster analysis, partitioning methods-hierarchical methods, density based methods-GRID based method –model based clustering methods.		

Recommended Texts

1. J.Han and M. Kamber, 2001, Data Mining Concepts and Techniques, Harcourt India Pvt. Ltd - New Delhi.

Reference Books

1. K.P. Soman, Shyam Diwakar, V.Ajay, 2006, Insight into Data Mining Theory and Practice, Prentice Hall of India Pvt.Ltd - New Delhi.

Website, E-learning resources

i http:// www.academicpress.com
ii. http://www.mkp.com

Title of the Course/ Paper	**ELECTIVE -II**	**CLOUD COMPUTING**	
Elective	**III Year &VI Semester**	**Credit: 4**	
Objective of the course	This course introduces the fundamental concepts of Cloud Computing.		
Course Outline	**Unit 1:** UNDERSTANDING CLOUD COMPUTING: Cloud Computing History of Cloud Computing Cloud Architecture Cloud Storage Why Cloud Computing Matters Advantages of Cloud Computing Disadvantages of Cloud Computing Companies in the Cloud Today Cloud Services.		
	Unit 2: DEVELOPING CLOUD SERVICES: Web-Based Application Pros and Cons of Cloud Service Development Types of Cloud Service Development Software as a Service Platform as a Service Web Services On-Demand Computing Discovering Cloud Services Development Services and Tools Amazon Ec2 Google App Engine IBM Clouds		
	Unit3: CLOUD COMPUTING FOR EVERYONE: Centralizing Email Communications Collaborating on Schedules Collaborating on To-Do Lists Collaborating Contact Lists Cloud Computing for the Community Collaborating on Group Projects and Events Cloud Computing for the Corporation.		
	Unit 4: USING CLOUD SERVICES: Collaborating on Calendars, Schedules and Task Management Exploring Online Scheduling Applications Exploring Online Planning and Task Management Collaborating on Event Management Collaborating on Contact Management Collaborating on project Management Collaborating on Word Processing - Collaborating on Databases Storing and Sharing Files.		
	Unit 5: OTHER WAYS TO COLLABORATE ONLINE: Collaborating via Web-Based Communication Tools Evaluating Web Mail Services Evaluating Web Conference Tools Collaborating via Social Networks and Groupware Collaborating via Blogs and Wikis		

REFERENCES

1) Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.
2) Haley Beard, Cloud Computing Best Practices for Managing and Measuring

Title of the Course/ Paper	**ELECTIVE -II**	**DECISION SUPPORT SYSTEM**	
Elective	**III Year &VI Semester**	**Credit: 4**	
Objective of the Course	This course introduces the fundamental concepts of Decision Support System.		
Course Outline	**Unit 1:** DECISION-MAKING AND COMPUTERIZED SUPPORT-Management Support Systems: An Overview, Decision Making, Systems, Modeling, and Support.		
	Unit 2: DECISION SUPPORT SYSTEMS-An Overview, Data Management: Warehousing, Access, and Visualization , Modeling and Analysis , Knowledge based Decision Support and Artificial Intelligence , User Interface and Decision Visualization Applications , Constructing a Decision Support System and DSS Research.		
	Unit 3: COLLABORATION, COMMUNICATION, AND ENTERPRISE SUPPORT SYSTEMS-Networked Decision Support: The Internet, Intranets, and Collaborative Technologies, Group Decision Support Systems, Executive Information and Support Systems.		
	Unit 4: FUNDAMENTALS OF EXPERT SYSTEMS AND INTELLIGENT SYSTEMS-Fundamentals of Expert Systems, Knowledge Acquisition and Validation, Knowledge Representation, Inferences, Explanations, and Uncertainty, Building Expert Systems: Process and Tools.		
	Unit 5: CUTTING-EDGE DECISION SUPPORT TECHNOLOGIES-Neural Computing: The Basics, Neural Computing Applications, Genetic Algorithms, Fuzzy Logic, and Hybrid Intelligent Systems , Intelligent Agents and Creativity , Implementing and Integrating Management Support Systems , Organizational and Societal Impacts of Management Support Systems.		

Text Book :

1. Efraim Turban, Jay E. Aronson, "Decision Support Systems and Intelligent Systems", Prentice Hall, New Delhi, 2004

Reference book:

1. George Marakas, "Decision Support Systems in the 21st Century", Prentice Hall, New Delhi, 2003

2. Robert J Thierauf, "User Oriented Decision Support Systems", Prentice Hall, New Delhi

ELECTIVE – III

Title of the Course/ Paper	**ELECTIVE – III OPEN SOURCE TECHNOLOGY**		
Elective	**III Year & VI Semester**	**Credit:4**	
Objective of the Course	To Understand the basics and advantages of open source and the software PHP and PYTHON		
Course Outline	**Unit I :** Introduction-definitions and history-open source operating systems-free BSD-Linux open source server applications-Apache-other servers-open source desktop applications-development of open source application		
	Unit 2: PHP Programming-PHP installation-PHP webpages-PHP and forms-PHP mysql configuration-PHP mysql functions-connecting mysql with PHP-selecting data from mysql database-case study: Building mysql enabled application with PHP.		
	Unit 3: Introduction to PYTHON-Basic elements-branching programs-string and inputs-iterations-simple numerical programs.		
	Unit 4: Functions and scoping and abstractions-functions and scoping-specifications-recursions-global variables-modules-files-tuples-lists and mutability function as objects-dictionaries.		
	Unit 5: Testing and Debugging- exceptions-and assertions-classes and object oriented programming-case study: creating mysql enables application using PYTHON.		

Text Books:

1.Paul kavanagh, open source software :implementation and Management, Elsevier Digital Press,2004(Unit – I)

2.Rasmus Lerdorf and Levin Tatroe, Programming PHP, O'Reilly 2002(Unit II)

3.Introduction to Computation Programming using python(revised and expanded edition),John. V. Guttag-MIT Press Cambridge London (Unit III,IV & V)

Title of the Course/ Paper	**ELECTIVE – III CLIENT / SERVER COMPUTING**		
Elective	**III Year & VI Semester**	**Credit: 4**	
Objective of the Course	This Subject deals with the C/S Computing, GUI.		
Course Outline	**Unit-1:** Introduction to Client/Server Computing – What is Client/Server Computing – Benefits of Client/Server Computing – Evolution of C/S Computing – Hardware Trends – Software Trends- Evolution of Operating Systems – N/w Trends – Business Considerations.		
	Unit-2: Overview of C/S Applications: Components of C/S Applications – Classes of C/S Applications – Categories of C/S Applications. Understanding C/S Computing: Dispelling the Myths – Obstacles – Upfront & Hidden – Open Systems & Standards – Standards – Setting Organizations – Factors of Success.		
	Unit-3: The Client Hardware & Software : Client Component – Client Operating Systems – What is GUI – Database Access – Client Software Products : GUI Environments – Converting 3270/5250 Screens – Database Tools – Client Requirements : GUI Design Standards – Open GUI Standards – Interface Independence – Testing Interfaces .		
	Unit-4: The Server : Categories of Servers – Features of Server Machines – Classes of Server Machines – Server Environment : N/W Management Environment – N/W Computing Environment – Extensions – Network Operating System – Loadable Module.		
	Unit-5: Server Operating System : OS/2 2.0 – Windows New Technology – Unix Based OS – Server Requirements : Platform Independence – Transaction Processing – Connectivity – Intelligent Database – Stored Procedure – Triggers – Load Leveling – Optimizer – Testing and Diagnostic Tools – Backup & Recovery Mechanisms.		

1. Recommended Texts

1. Patrick Smith & Steave Guengerich, “Client/Server Computing”. PHI

2. Dawna Travis Devire, “Client/Server Computing”. TMH

Title of the Course/ Paper	**ELECTIVE – III ENTERPRISE RESOURCE PLANNING**		
Elective	**III Year &VI Semester**	**Credit: 4**	
Objective of the Course	This Subject deals with the concepts of ERP.		
Course Outline	**Unit 1**: Business function and Business process: Functional areas and Business Process - functional area of operations - Business process - Marketing Sales - supply chain management - Accounting and finance - Human Resource - Functional areas of information system - The development of ERP system SAP R/3 - New directions in ERP - significance and benefits of ERP software and systems.		
	Unit 2 : Marketing information system and sales order process in ERP: sales and Distribution in ERP - Pre sales activities - sales order processing - inventory Sourcing - Delivery - Billing - payment - Customer relationship Management - benefits of CRM.		
	Unit 3: Production and supply chain management information system: Production overview - The production planning process - The SAP ERP Approach to production planning - Sales forecasting - sales and operation Planning - Demand management - Material requirement planning in SAP ERP - ERP and supplier - Supply chain.		
	Unit 4: Accounting in ERP: Accounting activities - using ERP for accounting Information - operational decision making problem - credit management - Industrial credit management in SAP ERP - product profitability analysis - Management reporting with ERP system - Document flow for customer Service		
	Unit 5 :Human resource process in ERP: HR with ERP - Advance HR features - Time management - Payroll - Travel management - Training and Development - Management by objectives - ERP process modeling		

Text Book:

1) ELLEN MONK and BRET WAGNER, ENTERPRISE RESOURCE PLANNING - 3rd edition - MGH.

Title of the Course/ Paper	**CORE PRACTICAL – VIII MINI PROJECT VIVA VOICE**		
Major Practical	**III Year & VI Semester**	**Credit: 4**	
To provide the students with experience in analyzing, designing, implementing and evaluating information systems. Students are assigned one or more system development projects. The project Development involves part or all of the system development life cycle. Hardware Maintenance and Computer Networking based projects can also be undertaken.			