

B.Sc. DEGREE COURSE IN COMPUTER SCIENCE

SYLLABUS

Title of the Course/ Paper	Programming in C		
Core	I Year & First Semester	Credit: 4	Code: SAE1A
Objective of the course	This course introduces the basic concepts of programming in C		
Course outline	Unit 1: 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.	12 Hours	
	Unit-2: 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.	12 Hours	
	Unit 3: Functions –Definition - proto-types - Passing arguments - Recursions. Storage Classes - Automatic, External, Static, Register Variables – Multi-file programs.	12 Hours	
	Unit-4: 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.	12 Hours	
	Unit-5 : Pointers - Declarations - Passing pointers to Functions - Operation in Pointers - Pointer and Arrays - Arrays of Pointers - Structures and Pointers - Files : Creating , Processing ,Opening and Closing a data file.	12 Hours	

Total Hours 60

1. Recommended Texts

- i. E.Balaguruswamy, 1995, Programming in ANSI C, TMH Publishing Company Ltd.

2. Reference Books

- i. B.W. Kernighan and D.M.Ritchie, 1988, The C Programming Language, 2nd Edition, PHI.
- ii. H. Schildt, C,2004, The Complete Reference, 4th Edition, TMH
- iii. Gottfried,B.S, 1996,Programming with C, Second Edition, TMH Pub. Co. Ltd., New Delhi.
- iv. Kanetkar Y., 1999, Let us C, BPB Pub., New Delhi.

Title of the Course/ Paper	Practical – I Programming in C		
Core	I Year & First Semester	Credit: 4	Code: SAE11
Objective of the course	This course train the students to solve the problems using C language		
Course outline	<p>I Summation of Series :</p> <p>1. Sin(x), 2. Cos(x), 3. Exp(x) (Comparison with built in functions)</p> <p>II String Manipulation :</p> <p>1. Counting the no. of vowels, consonants, words, white spaces in a line of text and array of lines</p> <p>2. Reverse a string & check for palindrome.</p> <p>3. Substring detection, count and removal</p> <p>4. Finding and replacing substrings</p> <p>III Recursion :</p> <p>1. ${}^n P_r$, ${}^n C_r$</p> <p>2. GCD of two numbers</p> <p>3. Fibonacci sequence</p> <p>4. Maximum & Minimum</p> <p>5. Towers of Hanoi.</p> <p>IV Matrix Manipulation :</p> <p>1. Addition & Subtraction</p> <p>2. Multiplication</p> <p>3. Transpose, and trace of a matrix</p> <p>4. Determinant of a Matrix</p> <p>V Sorting and Searching :</p> <p>1. Insertion Sort</p> <p>2. Bubble Sort</p> <p>3. Linear Search</p> <p>4. Binary Search</p>		

Total Hours 60

Title of the Course/ Paper	Digital Electronics & Microprocessors		
Core	I Year & Second Semester	Credit: 4	Code: SAE2B
Objective of the course	This course introduces the concepts of fundamentals of Digital Electronics and Microprocessor.		
Course outline	Unit 1: Binary Systems & Code conversion, Boolean Algebra & Logic Gates – Truth Tables – Universal Gates – Simplification of Boolean functions: SOP, POS methods – K-map, – Combinational Logic: Adders & Subtractors – Multiplexer – Demultiplexer - Encoder – Decoder.		12 Hours
	Unit-2: Sequential Logic: RS, Clocked RS, D, JK, Master Slave JK, T Flip-Flops – Shift Registers – Types of Shift Registers – Counters: Ripple Counter – Synchronous Counters – Up-Down Counter.		12 Hours
	Unit 3: Introduction to Microprocessors, Microcomputers, and Assembly Language – Microprocessor Architecture and Its Operations – Memory – I/O Devices – 8085 MPU – Introduction to 8085 Instructions – Data Transfer Operations – Addressing Modes - Arithmetic, Logic and Branch Operations – Writing Assembly Language Programs .		12 Hours
	Unit-4: Time Delay Programs: Time Delay Using One Register – Using a Register Pair – Using a Loop within Loop Technique – Counter Design with Time Delay – Stack and Subroutines – BCD to Binary Conversion and Vice-versa – BCD to HEX Conversion and Vice-versa – Binary to ASCII Conversion and Vice-versa – BCD Addition and Subtraction .		12 Hours
	Unit-5 : 8085 Interrupt – Vectored Interrupts – Interfacing I/O Devices: Basic Interfacing Concepts – Interfacing Input Devices- Memory-Mapped I/O.		12 Hours

Total Hours 60

1. Recommended Texts

- i. M. Morris Mano, 2005, Digital Logic and Computer Design, Prentice-Hall of India Pvt. Ltd.
- ii. Ramesh S. Gaonkar, 1999, Microprocessor Architecture, Programming, and Applications with the 8085, 5th Edition, Penram International Publishing (India) Pvt. Ltd.

2. Reference Books

- i. D. P. Leach and A. P. Malvino, 2002 Digital Principles and Applications, 5th Edition, Tata McGraw, Hill Publishing Co. Ltd.
- ii. V. Vijayendran, 2004 Digital Fundamentals, S. Viswanathan (Printers & Publishers) Pvt. Ltd.
- iii. V. Vijayendran, 2004, Fundamentals of Microprocessor – 8085, S. Viswanathan (Printers & Publishers) Pvt. Ltd.
- iv. N. K. Srinath 2005, 8085 Microprocessor Programming and Interfacing, Prentice-Hall of India Pvt. Ltd.

Title of the Course/ Paper	Practical II - Digital Electronics & Microprocessors Lab		
Core	I Year & Second Semester	Credit: 4	Code: SAE22
Objective of the course	This course gives training on the experiments of Digital Electronics and Microprocessor 8085.		
Course outline	<p>DIGITAL ELECTRONICS:</p> <ol style="list-style-type: none"> 1. Verification of Truth Table for AND, OR, NOT, NAND, NOR and EX-OR gates. 2. Realisation 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. 7. Four Bit Binary Adder 8. Four Bit Binary Subtractor using 1's and 2's Complement. <p>MICROPROCESSOR:</p> <ol style="list-style-type: none"> 1. 8 Bit Addition and Subtraction. 2. 16 Bit Addition. 3. BCD Addition. 4. BCD Subtraction. 5. 8 Bit Multiplication. 6. BCD Multiplication. 7. 8 Bit Division. 8. Searching for an Element in an Array. 9. Sorting in Ascending and Descending Orders. 10. Finding Largest and Smallest Elements from an Array. 11. Reversing Array Elements. 12. Block Move. 		

Total Hours 60

Title of the Course/	HTML		
Core		Credit: 2	Code: SNE1D
Objective of the course	This course introduces to the tags used in HTML		
Course outline	UNIT I: Introduction: Web Basics: What is Internet – Web browsers – What is Web page – HTML – Basics: Understanding tags.		6 Hours
	UNIT II: Tags for document structure (HTML, Head, Body tags). Block level test elements: (bold, italic, font, small, strong, strike, big tags)		6 Hours
	UNIT III: Lists: Types of lists: Ordered, Unordered - Nesting lists – Other tags: Marquee, HR, BR - Using images – Creating Hyperlinks.		6 Hours
	UNIT IV: Tables: Creating basic table, table elements, caption – Table and cell alignment – Rowspan, Colspan – Cell padding		6 Hours
	UNIT V: Frames: Frameset – Targeted Links – No frame – Forms: Input, Textarea, Select and Option.		6 Hours

Total Hours 30

Recommended Texts

- i. HTML Complete reference, teach yourself Web Publishing with HTML – Laura Lemay

Reference Books:

- i. HTML – E Stephen Mack, Janan Platt.

Title of the Course/	HTML LAB		
Core		Credit: 2	CODE: SNE24
Objective of the course	This course introduces to the programming in HTML		
Course outline	<ol style="list-style-type: none"> 1. Writing a script to create an array of 10 elements and display its contents. 2. Create a simple calculator using form fields. Have two fields for number entry and one field for the result. Allow the user to be able to use plus, minus, multiply and divide. 3. Create a document and add a link to it. When the users moves the mouse over the link, it should the linked document on its own (user is not required to click on the link). 4. Create a document which opens a new window without a toolbar, address bar or a status bar that unloads itself after one minute. 5. Design an HTML page that includes document structure tags, title, link break, multiple headings and link to email address. 6. Create an html file which is the main page with an image and some test messages along with hyperlinks which is linked to various pages. The navigation should be such that the links take you to the appropriate page and then back to the main page. 7. Create a HTML page to demonstrate the usage of Frames. Choose the content of the page on your own. 8. Design an application for pay slip through HTML forms. 		

Total Hours 30

Title of the Course/	Paper –V PROGRAMMING IN C++ AND DATA STRUCTURES		
Core	II Year & Third Semester	Credit: 4	Code: SAE3A
Objective of the course	This course introduces the basic concepts of programming in C++ and Data Structures		
Course outline	Unit 1: 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	12 Hours	
	Unit-2: Classes and Objects; Constructors and Destructors; and Operator Overloading and Type Conversions - Type of Constructors - Function overloading. Inheritance: Single Inheritance - Multilevel Inheritance - Multiple Inheritance - Hierarchical Inheritance - Hybrid Inheritance. Pointers, Virtual Functions and Polymorphism; Managing Console I/O operations.	12 Hours	
	Unit 3: 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. Data Structures: Definition of a Data structure - primitive and composite Data Types, Asymptotic notations, Arrays, Operations on Arrays, Order lists.	12 Hours	
	Unit-4: Stacks - Applications of Stack - Infix to Postfix Conversion, Recursion, Maze Problems - Queues - Operations on Queues, Queue Applications, Circular Queue. Singly Linked List - Operations, Application - Representation of a Polynomial, Polynomial Addition; Doubly Linked List - Operations, Applications.	12 Hours	
	Unit-5: Trees and Graphs: Binary Trees - Conversion of Forest to Binary Tree, Operations - Tree Traversals; Graph - Definition, Types of Graphs, Hashing Tables and Hashing Functions, Traversal - Shortest Path; Dijkstra's Algorithm.	12 Hours	

Total Hours 60

1. Recommended Texts

- i. E. Balagurusamy, 1995, Object Oriented Programming with C++, Tata McGraw-Hill Publishing Company Ltd.
- ii. E.Horowitz and S.Shani, 1999 Fundamentals of Data Structures in C++, Galgotia Pub.

2. Reference Books

- i. Robert Lafore, Object Oriented Programming in Microsoft C++, Galgotia publication.
- ii. H.Schildt, C++,1998,The Complete Reference-1998-TMH Edition, 1998
- iii. R. Kruse C.L. Tondo and B. Leung, 1997, Data Structures and Program design in C, PHI.
- iv. Cangsam,Auguenstein,Tenenbaum,Data Structures using C & C++,PHI
- v. D.Samantha, 2005, Classic Data Structures, PHI,New Delhi.

Title of the Course/	Paper VI PRACTICAL – III DATA STRUCTURES USING C++		
Core	II Year & Third Semester	Credit: 4	Code: SAE31
Objective of the course	This course deals with practical implementation of Data Structure using C++.		
Course outline	<ol style="list-style-type: none"> 1. Implement PUSH, POP operations of stack using Arrays. 2. Implement 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. Creation, insertion, and deletion in doubly linked list. 9. Binary tree traversals (in-order, pre-order, and post-order) using linked list. 10. Depth First Search and Breadth first Search for Graphs using Recursion. 		

Total Hours 60

Title of the Course/	Paper –VII - PROGRAMMING IN JAVA		
Core	II Year & Fourth Semester	Credit: 4	Code: SAE4A
Objective of the course	This course introduces the basic concepts of programming in JAVA		
Course outline	Unit 1: Introduction to Java-Features of Java-Basic Concepts of Object Oriented Programming-Java Tokens-Java Statements-Constants-Variables-Data Types- Type Casting-Operators-Expressions-Control Statements: Branching and Looping Statements.		12 Hours
	Unit-2: Classes, Objects and Methods-Constructors-Methods Overloading-Inheritance-Overriding Methods-Finalizer and Abstract Methods-Visibility Control –Arrays, Strings and Vectors-String Buffer Class-Wrapper Classes.		12 Hours
	Unit 3: Interfaces-Packages-Creating Packages-Accessing a Package-Multithreaded Programming-Creating Threads-Stopping and Blocking a Thread-Life Cycle of a Thread-Using Thread Methods-Thread Priority-Synchronization-Implementing the Runnable Interface.		12 Hours
	Unit-4: Managing Errors and Exceptions-Syntax of Exception Handling Code-Using Finally Statement-Throwing Our Own Exceptions-Applet Programming-Applet Life Cycle-Graphics Programming-Managing Input/Output Files: Concept of Streams-Stream Classes-Byte Stream Classes-Character Stream Classes – Using Streams-Using the File Class-Creation of Files-Random Access Files-Other Stream Classes.		12 Hours
	Unit-5: : Network basics –socket programming – proxy servers – TCP/IP – Net Address – URL – Datagrams -Java Utility Classes-Introducing the AWT: Working with Windows, Graphics and Text-AWT Classes- Working with Frames-Working with Graphics-Working with Color-Working with Fonts-Using AWT Controls, Layout Managers and Menus.		12 Hours

Total Hours 60

1. Recommended Texts

- i. E. Balagurusamy, 2004 Programming with JAVA, 2nd Edition, Tata McGraw-Hill Publishing Co.Ltd.
- ii. Herbert Schildt, 2005. The Complete Reference Java™ 2, 5th Edition, Tata McGraw-Hill Publishing Co. Ltd.

2. Reference Books

- i. Y. Daniel Liang, 2003, An Introduction to JAVA Programming, Prentice-Hall of India Pvt. Ltd.
- ii. Cay S. Horstmann and Gary Cornell, 2005, Core Java™2 Volume I-Fundamentals, 7th Edition- Pearson Education.
- iii. Ken Arnold, James Gosling and David Holmes, 2003, the Java™ Programming Language, 3rd Edition, Pearson Education.

Title of the Course/	Paper -VIII PRACTICAL – IV: JAVA PROGRAMMING LAB		
Core	II Year & Fourth Semester	Credit: 4	Code: SAE41
Objective of the course	This course gives the practical training in JAVA programming		
Course outline	<p>APPLICATIONS:</p> <ol style="list-style-type: none"> 1. Substring Removal from a String. Use String Buffer Class. 2. Determining the Perimeter and Area of a Triangle. Use Stream Class. 3. Determining the Order of Numbers Generated randomly using Random Class. 4. Usage of Calendar Class and Manipulation. 5. Implementation of Point Class for Image Manipulation. 6. String Manipulation Using Char Array. 7. Database Creation for Storing E-mail Addresses and Manipulation. 8. Usage of Vector Classes. 9. Interfaces and Packages 10. Implementing Thread based Applications and Exception Handling. 11. Application using Synchronization such as Thread based, Class based and Synchronized Statements. 12. Textfiles (copy, display, counting characters, words and lines) 13. Data file creating and processing for electricity billing. 14. Data file creating and processing for telephone billing <p>APPLETS:</p> <ol style="list-style-type: none"> 15. Working with Frames and Various Controls. 16. Working with Dialog Box and Menus. 17. Working with Colors and Fonts. 18. Drawing various shapes using Graphical statements. 19. Working with panel and all types of Layout. 20. Design a simple calculator with minimal of 10 operations 21. Usage of buttons, labels, text components in suitable application 22. Usage of Radio buttons, check box, choice list in suitable application. 		

Total Hours 60

Title of the Course/	Paper –IX - OPERATING SYSTEMS		
Core	III Year & Fifth Semester	Credit: 4	Code: SAE5A
Objective of the course	This course introduces the functions of operating systems.		
Course outline	Unit 1: 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 - Interprocess Communication. CPU Scheduling : CPU Schedulers – Scheduling criteria – Scheduling Algorithms	12 Hours	
	Unit-2:– 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.	12 Hours	
	Unit 3: 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.	12 Hours	
	Unit-4: 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.	12 Hours	
	Unit-5 : 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.	12 Hours	

Total Hours 60

1. Recommended Texts

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

2. Reference Books

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

Title of the Course/	Paper - X - DATABASE MANAGEMENT SYSTEMS		
Core	III Year & Fifth Semester	Credit: 4	Code: SAE5B
Objective of the course	This course introduces the basic concepts of database management systems		
Course outline	Unit 1: Advantages and Components of a Database Management Systems – Feasibility Study – Class Diagrams – Data Types – Events – Normal Forms – Integrity – Converting Class Diagrams to Normalized Tables – Data Dictionary.		12 Hours
	Unit-2: Query Basics – Computation Using Queries – Subtotals and GROUP BY Command – Queries with Multiple Tables – Subqueries – Joins – DDL & DML – Testing Queries		12 Hours
	Unit 3: Effective Design of Forms and Reports – Form Layout – Creating Forms – Graphical Objects – Reports – Procedural Languages – Data on Forms – Programs to Retrieve and Save Data – Error Handling.		12 Hours
	Unit-4: Power of Application Structure – User Interface Features – Transaction – Forms Events – Custom Reports – Distributing Application – Table Operations – Data Storage Methods – Storing Data Columns – Data Clustering and Partitioning.		12 Hours
	Unit-5 : Database Administration – Development Stages – Application Types – Backup and Recovery – Security and Privacy – Distributed Databases – Client/Server Databases – Web as a Client/Server System – Objects – Object Oriented Databases – Integrated Applications.		12 Hours

Total Hours 60

Recommended Texts

- i. G. V. Post – Database Management Systems Designing and Building Business Application – McGraw Hill International edition – 1999.

Reference Books

- i. Raghu Ramakrishnan – Database Management Systems – WCB/McGraw Hill – 1998.
- ii. C.J. Date – An Introduction to Database Systems – 7th Edition – Addison Wesley - 2000.

Title of the Course/	Paper - XI - Computer Architecture and Organization		
Core	III Year & Fifth Semester	Credit: 4	Code: SAE5C
Objective of the course	This course introduces the architecture of various computers and its organization.		
Course outline	Unit 1: Computer Evolution: Pentium and Power PC Evolution. Computer System: Components – Function – Interconnection Structures – Bus Interconnection – Basics of PCI Bus. Memory: Characteristics – Hierarchy – Cache Memory – Principles – Cache Design – Locality of Reference.	15 Hours	
	Unit-2: Main Memory: Static RAM – Dynamic RAM – Types of ROM – Memory Chip Organization – Types of DRAM. External Memory: Magnetic Disk – Basics of RAID – Optical Memory – Magnetic Tapes	12 Hours	
	Unit 3: Input/Output: External Devices – I/O Module – Programmed I/O – Interrupt Driven I/O – DMA – I/O Channels & Processors. Computer Arithmetic: ALU – Integer Representation and Arithmetic – Floating Point Representation and Arithmetic. Instruction Set: Characteristics – Operand Types – Operation Types – Addressing Modes – Instruction Formats – Pentium and Power PC Operands, Operations, Addressing Modes (Simple Examples).	15 Hours	
	Unit-4: CPU: Organization of Processors and Registers – Instruction Cycle – Instruction Pipelining – Pentium Processor. RISC: Characteristics – Large Register File – Register Optimization – Architecture – RISC Vs CISC Characteristics – Pipelining.	9 Hours	
	Unit-5: Control Unit: Micro-Operations – Control of Processors – Hardwired Implementation - Micro Programmed Control Concepts – Microinstruction Sequencing – General Microinstruction Execution.	9 Hours	

Total Hours 60

1. Recommended Texts

i. W. Stallings, 2003, Computer Organization and Architecture, 6th Edition- PHI, New Delhi.

2. Reference Books

i. C. Hamacher, Z. Vranesic, S. Zaky, 2002, Computer Organization, 5th Edition, McGraw Hill.

Title of the Course/	Paper -XII - PRACTICAL – V: RDBMS LAB		
Core	III Year & Fifth Semester	Credit: 4	Code: SAE51
Objective of the course	This course train the students to implement the database applications		
Course outline	<p>Create database and performing the operations given below using a Menu Driven program: Insertion, (b)Deletion, (c)Modification, (d)Generating a reports (Simple) for the following Systems using any RDBMS package :</p> <p>Payroll Mark sheet Processing Savings bank account for banking Inventory System Invoice system Library information system Student information system Income tax processing system Electricity bill preparation system Telephone directory maintenance.</p>		

Total Hours 60

ELECTIVE – I

Title of the Course/ Paper	VISUAL PROGRAMMING		
Elective	III Year & Fifth Semester	Credit: 4	Code: SEE5A
Objective of the course	To inculcate knowledge on Visual Basic concepts and Programming.		
Course outline	Unit 1: 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.	12 Hours	
	Unit-2: Displaying Information - Determinate Loops - Indeterminate Loops - Conditionals - Built-in Functions - Functions and Procedures.	12 Hours	
	Unit 3: Lists - Arrays - Sorting and Searching - Records - Control Arrays - Combo Boxes - Grid Control - Projects with Multiple forms - DoEvents and Sub Main - Error Trapping.	12 Hours	
	Unit-4: VB Objects - Dialog Boxes - Common Controls - Menus - MDI Forms - Testing, Debugging and Optimization - Working with Graphics.	12 Hours	
	Unit-5: Monitoring Mouse activity - File Handling - File System Controls - File System Objects - COM/OLE - automation - DLL Servers - OLE Drag and Drop.	12 Hours	

Total Hours 60

1. Recommended Texts

Gary Cornell - Visual Basic 6 from the Ground up - Tata McGraw Hill - 1999.

Noel Jerke - Visual Basic 6 (The Complete Reference) - Tata McGraw Hill – 1999

Title of the Course/	Paper-XIII DATA COMMUNICATION AND NETWORKING		
Core	III Year & Sixth Semester	Credit: 4	Code: SAE6A
Objective of the course	This course introduces the details about basic concepts of data communication and networking.		
Course outline	Unit 1: Introduction to Data Communication, Network, Protocols & standards and standards organizations - Line Configuration - Topology - Transmission mode - Classification of Network - OSI Model - Layers of OSI Model.	15 Hours	
	Unit-2: 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.	12 Hours	
	Unit 3: : 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.	15 Hours	
	Unit-4: History of Analog and Digital Network - Access to ISDN - ISDN Layers - Broadband ISDN - X.25 Layers - Packet Layer Protocol - ATM - ATM Topology - ATM Protocol.	9 Hours	
	Unit-5 : Repeaters - Bridges - Routers - Gateway - Routing algorithms - TCP/IP Network, Transport and Application Layers of TCP/IP - World Wide Web.	9 Hours	

Total Hours 60

1. Recommended Texts

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

2. Reference Books

- i. Jean Walrand 1998, Communication Networks (A first Course), Second Edition, WCB/McGraw Hill.
- ii. Behrouz and Forouzan, 2006 Data Communication and Networking, 3rd Edition, TMH.

Title of the Course/	Paper -XIV WEB TECHNOLOGY		
Core	III Year & Sixth Semester	Credit: 4	Code: SAE6B
Objective of the course	This course introduces the concepts of ASP, VB Script , Java Script.		
Course outline	Unit 1: 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	12 Hours	
	Unit-2: Introduction to Javascript – Advantages of Javascript – Javascript syntax - Data type –Variable - Array – Operator & Expression – Looping – control structures - Constructor Function – user defined function Dialog Box .	12 Hours	
	Unit 3: 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.	12 Hours	
	Unit-4: ASP.NET Language Structure – Page Structure – Page event, Properties & Compiler Directives. HTML server controls – Anchor, Tables, Forms, files. Basic Web server Controls – Lable, 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.	12 Hours	
	Unit-5: 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	12 Hours	

Total Hours 60

Recommended Texts

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

Reference Books

- i. Hathleen Kalata, Internet Programming with VBScript and JavaScript, Thomson Learning
- Mike McGrath, XML Harness the Power of XML in easy steps, Dreamtech Publications
- ii. T.A. Powell, 2002, Complete Reference HTML, TMH.
- iii. J.Jaworski, 1999, Mastering Javascript, BPB Publications.
- iv. Powell, Thomas; Schneider, Fritz, JavaScript: The Complete Reference, 2nd edition 2004, TMH

Title of the Course/	Paper - XV PRACTICAL – VI -WEB APPLICATIONS LAB		
Core	III Year & Sixth Semester	Credit: 5	Code: SAE61
Objective of the course	This course gives training in web design and applications.		
Course outline	<p><u>VB SCRIPT & JAVASCRIPT</u></p> <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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, onDbclick 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. <ol style="list-style-type: none"> 1. Make the left-hand frame contain a form with 3 radio buttons 2. The buttons should be for three search engines: <ol style="list-style-type: none"> a. Yahoo (http://www.yahoo.com) b. Altavista (http://www.altavista.com) c. Infoseek (http://www.infoseek.com) 3. 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.

Total Hours 75

ELECTIVE II

Title of the Course/ Paper	OBJECT ORIENTED ANALYSIS AND DESIGN		
Elective	III Year & Sixth Semester	Credit: 5	Code: SEE6C
Objective of the course	This course introduces to UML, object oriented analysis and design of any application		
Course outline	Unit 1: System Development - Object Basics - Development Life Cycle - Methodologies - Patterns - Frameworks - Unified Approach - UML.	18 Hours	
	Unit-2: Use-Case Models - Object Analysis - Object relations - Attributes - Methods - Class and Object responsibilities - Case Studies.	18 Hours	
	Unit 3: Design Processes - Design Axioms - Class Design - Object Storage - Object Interoperability - Case Studies.	15 Hours	
	Unit-4: User Interface Design - View layer Classes - Micro-Level Processes - View Layer Interface - Case Studies.	12 Hours	
	Unit-5: Quality Assurance Tests - Testing Strategies - Object orientation on testing - Test Cases - test Plans - Continuous testing - Debugging Principles - System Usability - Measuring User Satisfaction - Case Studies.	12 Hours	

Total Hours 75

Recommended Texts

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

ELECTIVE III

Title of the Course/ Paper	SOFTWARE ENGINEERING		
Core	III Year & Sixth Semester	Credit: 5	Code: SEE6G
Objective of the course	This course introduces the details about the concepts of life cycle of software		
Course outline	Unit 1: 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.		15 Hours
	Unit-2: Software Cost Estimation: Software – Cost factors – Software cost estimation techniques – specification techniques – level estimation – estimating software maintenance costs. The software requirements specification – formal specification techniques - languages and processors for requirements specification.		15 Hours
	Unit 3: 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.		15 Hours
	Unit-4: Implementation issues: Structured Coding techniques – coding style – standards and guidelines – documentation guidelines – type checking – scoping rules – concurrency mechanisms.		15 Hours
	Unit-5 : Quality assurance – walk through and inspection - Static analysis – symbolic exception – Unit testing and Debugging – System testing – Formal verification: Enhancing maintainability during development – Managerial aspects of software maintenance – Configuration management – source code metrics – other maintenance tools and techniques.		15 Hours

Total Hours 75

1. Recommended Texts

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

2. Reference Books

- i. R.S.Pressman, 1997, Software Engineering – 1997 - Fourth Ed., McGraw Hill.
- ii. Rajib Mall, 2004, Fundamentals of Software Engineering, 2nd Edition, PHI.