



**DR. A P J ABDUL KALAM UNIVERSITY,
INDORE**

SYLLABUS

For

DIPLOMA COMPUTER SCIENCE ENGINEERING

(3rd YEAR, 5th SEM)

College of Polytechnic Engineering

Dr. A P J Abdul Kalam University, Indore

DR. A P J ABDUL KALAM UNIVERSITY, INDORE

Syllabus for Diploma Computer Engineering

List of Subject (THIRD YEAR, 5TH & 6TH SEM)

S. No.	Subject Code	Subject name	Page No.
1	CSD501	Web Technology	3
2	CSD502	Java	5
3	CSD 503	Hardware Installation and Management	7
4	CSD 504	Software Engineering	10
5	CSD511	Wireless communication and Mobile Computing	12
6	CSD 512	Theory of Computation	14
7	DE9999P	Professional Activities	15

Chapter 1-Introduction To Web Design Web page and Web site - Web publishing Process of Web, publishing, planning, organizing, Hierarchical, Linear, Webbed. Implementing, Testing, Maintenance.

Chapter 2- HTML Introduction, Head section – Prologue, Link, Base, Meta, Script, Style, Body Section – Header, Paragraphs, Text Formatting, Linking, Internal, Linking, Embedding Images, Lists, Tables, Frames. Other Special Tags and Characters, HTML Forms.

Chapter 3- Java Script Introduction • Language Elements – Identifiers, Expressions, Keywords, Operators, Statements, Functions Object of Java Scripts – Window Object, Document Object, Forms Objects, Text Boxes and Text Areas, Buttons, Radio Buttons and Check Boxes, The Select Object Other Object – The Date Object, The Math Object, The String Object, Regular Expressions, Arrays, Worked Examples

Chapter 4-DHTML Introduction, Cascading Style Sheet (CSS) – Coding, Properties of Text, Property, Values, Other Style Values, In-Line Style Sheet, Embedded Style Sheet, External Style Sheet, Grouping, Inheritance, Classes as Selector, ID as Selector, Contextual Selector, Pseudo Classes and Pseudo Elements, Positioning, Backgrounds, Element Dimensions DHTML Document Object Model and Collections – Using the Collection all, Moving object around the documents Event Handling – Assigning Event Handlers, Even Bubbling, Filters and Transactions, Data Bindings – Using Tabular Data Control, Sorting Data, Dynamic, Sorting, Filtering.

Chapter 5-XML Basics, Introduction, HTML vs XML, Syntax of the XML Document, XML Attributes.

Chapter 6- Publishing The Site Uploading Web pages - Using FTP and using Web Page Editors, Web hosting - Shared hosting Running a Local Web server.

List of Practical's:

- [1]. Design a Home Page of Website using HTML Tags.
- [2]. Write an HTML Document to provide a form that collects names and phone numbers.
- [3]. Write a program in Java Script to compare numbers whose inputs will be taken from HTML Form.
- [4]. Write a JAVA Script function to display current date and time using Date Object.
- [5]. Write a Java Script to generate Random Numbers
- [6]. Design three pages of your Home Page and link all of them to a single style sheet.
- [7]. Design a web page that demonstrates blinking and scrolling text.
- [8]. Design a e- Commerce Site displaying the detail of the items that are sold in that store. The Site should provide a feature to sort the items based on the prize of the Items.
- [9]. Design a XML document using basic syntax.
- [10]. Uploading websites on FTP and Local Server.

Reference Books:

- [1]. Allen D.W. & Steve Johnson; the Learning Guide to Internet; B.P.B. Publication.
- [2]. Alexis Leon and Matthew Leon; Internet for every one; Vikas publishing house Pvt. Ltd. New
- [3]. Delhi Internet for Dummy, Pustak Mahal, New Delhi
- [4]. Dixit Manish (1999); Internet, An Introduction, CI Stems TMH Series , Tata McGraw Hill publishing company limited, New Delhi. Design Web Pages, BPB Publication.

Chapter 1-overview of java language java and its support systems, JAVA environment. JAVA program structure, Tokens, Statements, JAVA virtual machine, C++ Versus JAVA, Constants & Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting , Operators: Arithmetic, Relational, Logical Assignments, Increment & Decrement, Conditional, Bit wise, Special, Expressions & its Evaluation. Control statements: If statements and its variant, Switch statement,? Operator, While loop, Do while loop, For loop, Break and continue, Labeled Loops.

Chapter 2- classes, objects & methods Defining a Class, Adding Variables & Methods, Creating Objects, Accessing Class Members , Constructors, Methods Overloading, Static Members, Nesting of Methods, Inheritance: Extending a Class, Overriding Methods, Concept of public, private and protected, Final Variables & Methods, Final Classes, Finalizer Methods, Abstract methods & Classes, Static class, Visibility Control.

Chapter 3 arrays, strings & vectors Arrays : One Dimensional & two Dimensional, strings, Vectors, wrapper Classes, Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interfaces Variables, Systems Packages, Using System Packages, Naming Conventions, Creating Packages, Accessing a Package, Using Package, Adding a Class to a Package, Hiding Classes.

Chapter 4 multithreaded programming Creating Threads, Extending the Threads Class, Stopping & Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, basic exception handling ,Threads Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface.

Chapter 5 applet programming Local & Remote Applets, Applets Vs Applications, Writing Applets, Applets Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User.

Chapter 6 JDBC Understanding JDBC, JDBC Architecture, types of JDBC driver, Register JDBC driver, establish a database connection, execute an SQL statement, process the result, close the data base connection

Chapter 7 File handling and simple GUI Design Introduction, Data records, reading and writing to text files, simple GUI design joption pane class, message dialog-presenting information to user, input dialog reading data from the user, confirmation dialog - getting confirmation from user.

List of Practical's:

- [1]. Programs using various decision making & looping statements of JAVA.
- [2]. Programs to demonstrate the use of array, Class & packages.
- [3]. Programs using Concept of public, private and protected, Final Variables & Methods.
- [4]. Programs using Final Classes, Finalizer Methods, Abstract methods & Classes, Static class, Visibility Control.
- [5]. Program for creating & extending thread.
- [6]. Programs to demonstrate the use of multiple threads.
- [7]. Programs to create an applet for "HELLO " & call this in HTML.
- [8]. Programs to demonstrate the use of various applet tags, Designing data entry forms using various building blocks at client side.
- [9]. Program to connect single & multiple databases using JDBC concept. Program to read & write a text file. program for GUI design using joption pane class.

REFERENCE BOOKS:

- [1]. Peter Norton , Peter Norton Guide to JAVA Programming, Techmedia Publications.
- [2]. Stroker, Plew, 1998, An introduction to JAVA, Thomson learning

Chapter 1: PC FUNDAMENTALS Elements of Computers, Processors Specifications, SMPS, Types of data cables and power cables, Types of connectors, headers I/O Ports:- Serial, Parallel, USB, Chipset, Video system, sound system, Drive system, MODEM, USB Printers

Chapter 2. MOTHERBOARD Motherboard Controllers, & System Resources, Memory Mapping Interrupts Request Line (IRQ) - Purpose, Standard Assignments, Conflicts, Sharing & ISA, PCI, PnP Configuration of IRQ System Buses - Industry Standard Organization, Micro Channel Architecture, Enhanced Industry Standard Architecture, UESA Local Bus, Peripheral Component Interconnect, Accelerated Graphics Ports, PCI-X. Chipsets – Northbridge & South Bridge, Function of Chipset Motherboard form factor & Power supplies - AT, ATX, LPX & NLX, Voltage & Signal Lines, Power Supply Quality & Specifications, Form Factors, Ribbon Cable and Adapter Card Installation Batteries - charging, rating, CMOS backup Batteries, Backup Battery replacement

Chapter 3. MICROPROCESSOR Processor Specification - Clock Speed, FSB, L1, L2 & L3 cache, Processor over clocking CPU – RISC & CISC Microprocessor CPU Packaging - DIP, PGA, SPGA, MCM, LCC, PLCC & Tape Carrier Package. Intel CPU Family - Fifth generation & Sixth Generation P6, Xeon, Celeron Processor AMD CPU Family - Fifth, Sixth, & Seventh Generation K Series, Athlon, Thunderbird & Duron Processor Handling & Replacement of CPU, CPU Configuration FSB, Core Speed, Core Voltage Configuration

Chapter 4: MEMORY Logical Organization of Memory - Real Mode, Protected Mode, Lower, BIOS Data Area, Upper Memory, High Memory Area, Frame Buffer, Shadow & Cache Memory Packaging - DTPP, STPP, SIMM, DIMM, RIMM, RAM Types - EDO, SDRAM, VRAM, SGRAM, RDRAM, DDRAM, PPRAM, DDR 1, DDR 2, DDR 3 Memory Performance - Speed, Inter living & Caching Interfaces - IDE, ATA 1 to 6, Master Slave Configuration, SCSI, SATA, PATA. SCSI Interface - BUS ID, Logical Unit Number, Termination, Signaling Types, SCSI Standards, Comparison between IDE & SCSI Optical Storage Devices - CD, DVD, and Blu-ray Disc

Chapter 5: BIOS ,BIOS Functions Cold & Warm Booting BIOS Error Codes BIOS Interrupts Identification of Different BIOS (AMI, & AWARD BIOS) BIOS Memory Assignments, BIOS Advance setup

Chapter 6: ASSEMBLING THE COMPUTER PC Case/Cabinet Preparation, Mounting process of the Motherboard, CPU Installation , Attaching Heat sink and Cooling Fan, RAM installation, Connecting SMPS to different devices, Connecting Hard-drive and its cables, Installation of optical drives, video card, sound cards, PCI cards and Expansion cards.

Chapter 7. MAINTENANCE OF COMPUTER Error Codes- Beep Codes, Post Codes, Windows System Tools – Back Up, Disk Clean Up, Disk Defragmenter, Files and Settings Transfer Wizard, Scheduled Tasks, Security Center, System Information, System Restore Antivirus and Other Complete Security Tools.

LIST OF PRACTICALS

- [1]. Preparing the case
- [2]. Installation and troubleshooting the Motherboard
- [3]. Installation and troubleshooting the CPU
- [4]. Installation and troubleshooting the heat sink and cooling fan
- [5]. Installation and troubleshooting RAM
- [6]. Installation and troubleshooting SMPS to different devices
- [7]. Installation and troubleshooting the hard-drive and its cables
- [8]. I Installation and troubleshooting optical drives
- [9]. Installation and troubleshooting the video card, sound cards and other cards
- [10]. Installation and troubleshooting PCI
- [11]. Installation and troubleshooting Expansion cards
- [12]. Operating System Installation i.e. Windows and Open Source OS (Linux, SUN)
- [13]. Device Driver Installation

Recommended Text Books

- [1]. Stephen J. Bigelow, Troubleshooting, Maintaining and Repairing pcs, Fifth edition
TMH.

Reference books

- [1]. Subhadeep Choudhary, The A-Z of PC Hardware & Maintenance part I and II.
[2]. Govindrajalu, IBM PC and Clones.
[3]. Balasubramanyam, Computer Installation and Servicing.

Chapter 1: INTRODUCTION TO SOFTWARE ENGINEERING Software characteristics, Software myths. Components, application; process, methods, tools & view of S/E; software process Capability Maturity Model, life cycle models (water fall, incremental, spiral, RAD, prototyping, object oriented) fourth generation model.

Chapter 2: SOFTWARE PROJECT PLANNING Responsibilities of Software Project manager, Project planning Objective, Software scope, Software project estimation technique, Decomposition techniques, Estimation models, Scheduling, staffing, Risk Management, Software configuration Management

Chapter 3: SOFTWARE REQUIREMENT ANALYSIS, SPECIFICATION & MODELING Analysis principles, system specification, software requirement specifications, functional specifications, software prototyping, specification, data modeling, data flow diagrams, ER Diagram, Mechanics of structured analysis, data dictionary.

Chapter4: OBJECT –ORIENTED CONCEPT Object Oriented Concepts, Unified Modeling language Diagram(Use Case Diagram, Class Diagram, Sequence Diagram, State Chart Diagram)Elements Of Object Modeling, Management Of Object Oriented Software Projects, Object Oriented Analysis, Domain Analysis, OOA Process Conventional v/s OO Approach, Object –Relationship Model

Chapter 5: DESIGN CONCEPT PRINCIPLE AND METHODS Design Process, Design Principles, Design Concepts, Effective Modular Design, Design Documentation, Architectural Design, and Architectural Design Process - Optimization, Procedural Design.

Chapter 6: SOFTWARE TESTING Software Testing Fundamentals: Principles & objectives, V model. Testing Methodology: Unit Test, Integration Test, Functional testing, System Testing, Acceptance test, White Box & Black Box testing techniques Gray box testing, Retesting and Regression testing, Debugging & reliability Analysis. Testing Documentation: Test Requirement, Test Plan, Test case design and execution(Study of manual testing tool : Quality center) Software Reliability And Quality Management: Concepts of S/W Quality Control and Assurance, Software Reliability, ISO 9000 & 9001, Standard SEI –CMM

Chapter 7: SOFTWARE IMPLEMENTATION AND MAINTAINANCE Characteristics, reverse engineering, maintenance process model, estimation of maintenance cost.

REFERENCE BOOKS:

- [1]. Software engineering A Precise Approach by Pankaj Jalote's ,Wiley India.
- [2]. Rajib Mall, Fundamental of Software Engineering, PHI.
- [3]. Software Engineering by Kassem A. Saleh J.Ross Publishing
- [4]. Ron Patton, Software Testing, BPB.
- [5]. Gazzi, Fundamental of Software Engineering, PHI.
- [6]. Maryhauser Anneliese Von, Software Engineering Methods Management
- [7]. Academic Press. Wirts Brock Elal, Designing object oriented software, PHI.
- [8]. Rajaraman V, Analysis and Design of Information System, PHI.

Chapter 1: Introduction to wireless Technology, Comparison of wired and wireless mechanism, Basic equipments in wireless communication: Wireless access point, Wireless access cards, routers etc. Various types of wireless communication technologies used in Mobiles, Antennas etc. Concept of spread spectrum, various types of spread spectrum , Spreading sequences.

Chapter 2. Wireless LAN, Wireless local loops, Wireless access protocols, Various types of wireless LAN technologies like infrared, microwave LANs etc. IEEE 802.11x standards for wireless LANs

Chapter 3 Cellular system infrastructure, Cell fundamentals: Cell site, cell capacity, frequency reuse clustering, co channel interference ,Cell splitting ,cell sectoring. Mobile station(MS), Base transceiver station (BTS), Mobile switching center(MSC), Functions of MSC, Base station system, Base station control,HLR,VLR, Mobile station(MS) registration

Chapter 4 : GSM Technology , GSM network architecture ,GSM channel concepts: logical channels, Broadcast channel, Common control channel & dedicated control channel, GSM identities: Mobile station associated numbers, Network Numbering plans, mobile station roaming number. GSM system operation: GSM call setup phase, GSM call confirmation and call accepted , GSM location updating, GSM Connection release. Overview of CDMA technology

Chapter 5: Reflection & Propagation models , Mobile radio propagation, Ground reflection model, Diffraction sculpturing, Indoor propagation models ,Outdoor propagation models ,Ray tracing

Chapter 6 Evolution and Deployment of cellular system, Short Message Services (SMS), Enhanced Message services(EMS), Multimedia Message Services (MMS) & Mobile Instant Messaging(MIM),1G cellular Systems,2G cellular Systems,2.5G cellular Systems,3G cellular Systems,4G cellular Systems, Emerging wireless technologies

REFERENCES

- [1]. "Wireless Communication and Networks" by William Stallings, 1st edition.
- [2]. Wireless & Cellular Telecommunications, 3/e, Dr. William C.Y. Lee, TMH
- [3]. Introduction to Wireless telecommunication systems and networks, Mullett, cengage learning
- [4]. Mobile Communication – Schwartz
- [5]. "Introduction to wireless and mobile systems" -2 nd edition by Dharmprakash Agrawal & Qing- An Zeng, Cengage Learning, Indian edition.

Chapter 1 Automata theory: Basic machine, FSM , Transition graph, Transition matrix, Deterministic and nondeterministic FSM'S, Equivalence of DFA and N DFA, Mealy & Moore machines, minimization of finite automata, Two-way finite automata. Regular Sets and Regular Grammars, Alphabet, words, Operations, Regular sets, Finite automata and regular expression, Pumping lemma and regular sets, Application of pumping lemma, closure properties of regular sets.

Chapter 2 Context –Free Grammars: Introduction to CFG, Regular Grammars, Derivation trees and Ambiguity, Simplification of Context free grammars, Normal Forms (Chomsky Normal Form and Greibach Normal forms).

Chapter 3 Pushdown Automata: Definition of PDA, Deterministic Pushdown Automata, PDA corresponding to given CFG, CFG corresponding to a PDA. Context Free Languages: The pumping lemma for CFL's, Closure properties of CFL's, Decision problems involving CFL's.

Chapter 4 Turing Machines: Introduction, TM model, representation and languages acceptability of TM, Church's hypothesis, composite & iterated TM. Turing machine as enumerators. Properties of recursive & recursively enumerable languages, Universal Turing machine.

Chapter 5 Related Problems: P, NP, NP complete and NP hard problems, examples of these problems like Hamiltonian path problem, traveling sales man problem etc.

REFERENCES

- [1]. John E. Hopcroft, Jeffery Ullman, "Introduction to Automata theory, Languages & computation" , Narosa Publishers.
- [2]. K.L.P Mishra & N.Chandrasekaran, "Theory of Computer Science", PHI Learning
- [3]. Michael Sipsev, "Theory of Computation", Cenage Learning
- [4]. John C Martin, "Introduction to languages and theory of computation", McGraw Hill
- [5]. Daniel I.A. Cohen, "Introduction to Computer Theory", Wiley India.

Chapter 1: PRESENTATION SKILLS: Oral Presentation: Need of effective oral presentation. Characteristics of good oral presentation. Ways of Oral Presentation (Seminar, Viva-voce, Interview, Group Discussion, Lecturing, Power Point Presentations etc.) Gestures/Mannerism during oral presentation Media, methods used for effective oral presentation. Assessment of oral presentation. Written Presentation : Need and characteristics of written presentation. Ways of written presentation (Report writing, manual, handout, notes etc.). Grammar, Punctuation, referencing paragraphing during written presentation.

Chapter 2: LEARNING TO LEARN SKILLS: Need of Learning to Learn Skills. Type of Learning Skills (Learning face to face, Individualized learning, Distance learning, Self-learning). Developing Learning to Learn Skills.

Chapter 3: STUDY SKILLS: Methods of Good Study Habits Note Taking Developing Reading Skills.

Chapter 4: INFORMATION SEARCH: Objectives of information search. Ways of information search (Internet surfing, Library search, Abstracts, Journals, books etc.) ,Assimilation and presentation of information.

Chapter 5: TIME MANAGEMENT : Principles of Time Management. Time Management matrix. Criteria governing Time Management. Possible time waster

Chapter 6: PERSONALITY: Concept and meaning of personality, Characteristics of good personality, Factors influencing personality. Types of personality Need for desirable personality for success, Qualities of complete personality.

Chapter 7:PERSONAL GROOMING: Posture and Health, Types and importance of posture, Importance of yoga and meditation, Factors affecting good health-diet, exercise personal cleanliness, sleep and rest, Use of cosmetics, Dress Code, Physical Fitness and Inner Strength.