PROGRAMME CODE --- 210206

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY (B.SC.IT)

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Bachelor of Science in Information Technology (B.Sc.IT)
The UG Degree consists of 25 Subjects in all. These comprise of Subjects:
Year I: ITP-11 to ITP14 and ITP-30, ITP-33, ITP-34
Year II: ITP-15 to ITP-21 and ITP-31
Year III: ITP-22 to ITP-26 and ITP-32, ITP-35

If any student wants to appear for semester system then follow the below mentioned subject’s module:
**Semester I:** ITP11-ITP13, ITP33
**Semester II:** ITP14, ITP30 & ITP34
**Semester III:** ITP15-ITP18
**Semester IV:** ITP19-ITP21 & IT31
**Semester V:** ITP22-ITP25
Semester VI: ITP26, ITP32 & ITP35

Detailed Syllabus

ITP11---INTRODUCTION TO INFORMATION TECHNOLOGY

UNIT I Computing Fundamentals

Brief history of development of computers, Computer system, concepts, Computer system Characteristics, Capabilities and limitations, Types of computers Generations of computers, Personal Computer (PCs) – evolution of PCs, configurations of PCs- Pentium and Newer, PCs Specifications and main characteristics- Basic components of a computer system - Control unit, ALU, Input/output functions and characteristics, memory - RAM, ROM, EPROM, PROM and Other types of memory

UNIT II Input/output Devices and types of Printers

Input/output & Storage Units-: Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard - VGA, SVGA, XGA etc, Printers& types - Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers

UNIT III Software and its types, Operating System

Software and its Need, Types of Software - System software, Application software, System Software - Operating System, Utility Program, Programming languages, Assemblers, Compilers and Interpreter, Introduction to operating system for PCs-DOS Windows, Linux, File Allocation Table (FAT & FAT 32), files & directory structure and its naming rules, booting process details of DOS and Windows,

UNIT IV Languages

DOS system files Programming languages- Machine, Assembly, High Level, 4GL, their merits and demerits

UNIT V Use of communication and IT

Communication Process, Communication types- Simplex, Half Duplex, Full Duplex, Communication Protocols, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication; Modem - Working and characteristics, Types of network Connections - Dialup, Leased Lines, ISDN, DSL, RF, Broad band ,Types of Network - LAN, WAN, MAN ,Internet, VPN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN - Media, NIC, NOS, Bridges, HUB, Routers, Repeater and Gateways- Internet-Evolution, World Wide Web Internet Services, Convergence of technologies
UNIT VI MIS
Management information system - Introduction, Characteristics, Needs, Different views of MIS, Designing, Placement of MIS, Pitfalls in Designing an MIS, Computer based MIS – Advantages & Disadvantages

UNIT VII Computer Applications in Business
Need and Scope, Computer Applications in Project Management, Computer in Personnel Administration, Information System for Accounting-Cost and Budgetary Control, Marketing and Manufacturing, Computer Applications in Materials Management, Insurance and Stock-broking, Production planning and Control, Purchasing, Banking, Credit and Collection, Warehousing

UNIT VIII Ms Word
Introduction to Ms Word, Document Window, Application Window, Formatting in Ms Word, Mail Merge

Reference Books:
1. Fundamentals of Technology Project Management by Colleen Garton and Erika McCulloch

ITP12---Programming In C

Block 1: Introducing the Fundamentals of C Programming
Introduction, Exploring Data Types- The char Data Type, The int Data Type, The float Data Type, The double Data Type, The void Data Type. Introducing Constants, Introducing Variables- Declaring Variables, Initializing Variables. Introducing const and volatile Type Qualifiers- The const Type Qualifier, The volatile Type Qualifier. Explaining Data Type Modifiers, Exploring Backslash Constants, Exploring Symbolic Constant, Exploring Delimiters, Understanding Multiple Assignments.

Block 2: Managing Input and Output

Block 3: Working with Operators and Expressions in C
Block 4: Control Structures-I

Introduction, Exploring the Syntax of a Control Structure, Working with Conditional Statements- Using the if Statement, Using the if-else Statement, Creating the Nested if Statements, Using the if-else Ladder, Using the switch Statement, Creating Nested switch Statements. Working with Iterative Statements- Using the while Loop, Using the do-while Loop, Using the Loop. Working with Jump Statements- Using the break Statement, Using the continue Statement, Using the go to Statement.

Block 5: Arrays

Introduction, Introducing Arrays, Types of Arrays- One-Dimensional Arrays, Two-Dimensional Arrays, and Limitations of Arrays.

Block 6: Working with Functions

Introduction, Overview of Functions- Function Definition, Function Invocation, Types of Functions- Built-in Functions, User-defined Functions, Parameter Passing Mechanisms, Passing Arrays in Function, Recursive Functions, Functions and Variables- Local and Global Variables, Static and Register Variables.

Block 7: String Handling in C-I

Introduction, Understanding Strings in C, Declaring and Initializing a String, Reading and Displaying the Strings- Using the scanf() and printf() Functions, Using the puts() and gets() Functions, Using the getchar() and putchar() Functions. Creating an Array of Strings.

Block 8: String Handling in C-II

Performing String Operations- Concatenating Strings, Calculating the Length of a String, and Comparing Strings- Using String Handling Functions- strlen(), strcmp(), strncmp(), strcat(), strncat(), strcpy(), strncpy(), strchr(), strlwr(), strupr(), strrev().

Block 9: Structures and Unions


Block 10: Pointers

Introduction, Understanding Pointers, Declaring a Pointer Variable, Using the address of (&) Operator, Initializing a Pointer Variable, Dereferencing a Pointer, Performing Operations on Pointers- Assignment, Arithmetic, Comparison, Working with Functions and Pointers- Call By Value, Call by Reference. Working with Arrays and Pointers- Pointers to One-dimensional Arrays, Pointers to String. Allocating Memory at Runtime- malloc(), calloc(), free(), realloc().

Block 11: Working with Preprocessor Directives

Block 12: Data File Processing in C

Introduction, Exploring Data Files, Opening and Closing Files- Reading from Files, Writing to Files, Accessing Data Files Randomly- The fseek() Function, The ftell() Function, The fread() Function, The fwrite() Function.

ITP13---RDBMS

Block 1: Understanding Database Management System


Block 2: Introducing Relational Database Management System

Introduction. Relational Database Management System- Characteristics of RDBMS, Exploring Tables in Databases, ER Diagrams. Explaining Data Integrity- Entity Integrity, Domain Integrity, Referential Integrity, User-Defined Integrity. Exploring Keys- Primary Key, Foreign Key, Composite key, Candidate Key. Rules of Normalization- First Normal Form, Second Normal Form, Third Normal Form, Fourth Normal Form, Fifth Normal Form. BoyceCodd’s 12 Rules

Block 3: Performing Basic SQL Operations


Block 4: Performing Transact-SQL Operations

Introduction. Data Types- Exact Numeric, Approximate Numeric, Date and Time, Character Strings, nicode Character Strings, Binary Strings, Other Data Types. Control Flow Statements- The BEGIN...END Statement, The GOTO Statement, The IF...ELSE Statement, The WHILE Statement. Database Operations- Creating a Database, Dropping the Database. Table Operations- Creating a Table, Altering the Table, Renaming the Table, Dropping the Table. Constraints- The PRIMARY KEY Constraint, The UNIQUE Constraint, The FOREIGN KEY Constraint, The CHECK Constraint. Joins- Performing a Cross Join, Performing an Inner Join, Performing an Outer Join, Performing a Self-Join.

Block 5: Working with Stored Procedures and User-Defined Functions


Block 6: Using Triggers

**Block 7: Understanding Transaction, Locking, and Error Handling**


**ITP14---operating system**

**Block 1: Overview of Operating Systems**

Computer and System Software, Objectives and History of Operating Systems, Categories of OS, Job Scheduling, Virtual Storage.

**Block 2: Memory Management**


**Block 3: Process Management and CPU Scheduling**


**Block 4: Concurrency and Process Synchronization**

Need for Concurrent Process Synchronization, Cooperating Processes, The Bounded Buffer Producers and Consumers Problem, Critical Section Problem, Inter- Process Communication, Semaphores, Monitors.

**Block 5: Threads**

Overview of Threads, User and Kernel Threads, Multithreading Models, Thread Libraries, Design Issues in Threads, Other Threading Issues

**Block 6: Deadlock and Starvation**


**Block 7: Deadlock Handling**

Deadlock Prevention, Mutual Exclusion Condition, Hold and Wait Condition, No Preemption, Circular Wait, Deadlock Avoidance, Dijkstra’s Banker’s Algorithm, Deadlock Detection and Recovery.
Block 8: Main Memory and Virtual Memory Management

Storage Organization, Memory allocation to programs, Partitioning of Memory, Free Space Management, Buddy System Memory Allocator, Memory Protection Hardware in Multiprogramming Systems, Overlay Structured Programs, Paging, Page Replacement Algorithms, Segmentation

Block 9: File System Management and Implementation


Block 10: Allocation Methods

File Allocation Methods, Free space management techniques, File System Recovery.

Block 11: Distributed System

Overview of Distributed Systems, Distributed Computing System Models, Design Issues of the DOS.

Block 12: Topologies


Block 13: Security


Block 14: Authentication

User Authentication, Biometrics, Program Threats, Cryptography, Denial of Service Attacks.

Block 15: Introducing Linux

Introducing Linux, Exploring Linux Distributions, Exploring Fedora Linux, Exploring the Features of Fedora Linux, Deploying Fedora Linux

ITP30---Computer Organization & Architecture

UNIT I: Introduction
Computer System, Components of a Computer System, Computer Organization, Data Representation, Performance Factors

UNIT II: Digital Logic Circuits
Digital Computers, Logic Gates, Boolean algebra

UNIT III: Map Simplification
Product-of-Sums Simplification, Don’t Care Conditions.

UNIT IV: Circuits and Flip Flops
UNIT V: Digital Components
Integrated Circuits, Decoders, Multiplexers, Registers, Shift Registers, Binary Counters.

UNIT VI: Data Representation
Number System, Octal and Hex Decimal Numbers, Decimal Representation, Complements, Fixed-Point Representation, Floating-Point Representation, Other Binary Codes

UNIT VII: Register Transfer and Micro operations
Register Transfer Language, Bus and Memory Transfer, Arithmetic Micro operations, Logic Micro operations and Shift Micro operations

UNIT VIII: Programming the Basic Computer

UNIT IX: Central Processing UNIT
Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Program Control, and Program Interrupt.

UNIT X: Control UNIT
Introduction, Control Memory, Microprogramming, Computer Configuration, Design of Control UNIT, Overview of RISC/CISC

UNIT XI: Pipeline and Vector Processing
Parallel Processing, pipelining, Arithmetic Pipeline, Instruction Pipeline.

UNIT XII: Memory Organization
Memory Hierarchy, Main Memory or Primary Memory, Design of Main Memory, Auxiliary Memory, Virtual Memory, Memory Management, Associative Memory

Reference Books:
2. The Essentials of Computer Organization And Architecture by Linda Null and Julia Lobur
3. Essentials of Computer Organization and Architecture by Linda Null and Julia Lobur

ITP15---WEB TECHNOLOGY

Unit 1: Exploring Web Technologies

Unit 2: Exploring HTML

Unit 3: Descriptive Markups

The META Element, Semantic Tags, the Dublin Core and RDF

Unit 4: Working with Style Sheets

Internal Style Sheet, Inline Style Sheet, External Style Sheet.

Unit 5: Client Side Programming


Unit 6: Server Side Programming

Introduction to Server-Side Web Technologies, Programming Languages for Server-Side Scripting, Configuring Server to Support CGI Applications, Working with Forms and I/O Operations

Unit 7: Miscellaneous Web Technologies

Exploring Java Technologies, Describing VRML Idea, Microsoft .NET Technology

ITP16---unix with shell programming

Block 1: Introducing UNIX Operating System

Introduction, Hardware configuration for Unix, Features of Unix, Architecture of Unix, Unix Commands, PATH, man, echo, Printf, script, passwd, who, date, sty, pwd, cd, mkdir, rmdir, Is, cp, mv, rm, cat, more, wc, lp, od, tar, gzip, Unix Utilities, System calls.

Block 2: Exploring File System in UNIX


Block 3: File System Commands

File System Commands.

Block 4: Unlink

Du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp, telnet, rlogin, Compressing and Decompressing files.

Block 5: Using advanced Commands in UNIX
Introduction, tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm., cmp, diff, tr, awk, cpio.

**Block 6: Using Vi Editor**

Introduction, Modes, Command Mode, Insert Mode, Basic Navigation, Adding, Deleting and Changing text in vi editor, Saving and reading Files in vi editor.

**Block 7: UNIX Shell Programming**

Introduction, The Shell’s Interpretive cycle, Describing types of Shells in Unix, C Shell, TC shell, Korn Shell, Bash Shell, Redirection, Pipes, Tee command, Shell Variables, Job Control.

**Block 8: Quoting**

Quoting, Quoting with Backlashes, Using Single Quotes, Using Double Quotes.

**Block 9: Substitution**

Substitution, File Substitution, Variable Substitution, Command Substitution, Arithmetic Substitution

**Block 10: Exploring Filters**

Introduction, Filter command, Concatenating File, Display Beginning and End of Files, Paginating File, Cut a File, Pasting Files, Sorting a File.

**Block 11: Translating Characters**

Translating Characters, Searching Duplicate Lines, Counting Characters, Comparing Files, Deleting Lines.

**Block 12: Filtering with Awk**

Introduction, Variables and Expressions, The comparison operators, Variables, Storing awk programs in a file.

**Block 13: Arrays**

Arrays, Functions, String Functions, Mathematical Functions, User-Defined Functions, Splitting Lines into Fields, Comparing sed and awk, Using grep.

**Block 14: Programming in C shell**

Introduction, Environment variables, Adding Environment variables, Setting Environment variables

**Block 15: Using Scripts**

Startup and Shutdown scripts, Command Execution scripts

**Block 16: Expressions**

Using Expressions, Commands Execution in Shell syntax

**ITP17---COMMUNICATION SKILLS**
UNIT I: Concord & Forms of Verbs Rule of Concord or Agreement.

UNIT II: Forms of Verbs: Present Tense, Past Tense, Future Tense, Tenses with Since.

UNIT III: The Future Tense in Adverbial Clauses, Tense in Sentences of Condition.

UNIT IV: Idiomatic use of Prepositions and Conjunctions.

UNIT V: What is an Idiom, Idiomatic Use of Prepositions.

UNIT VI: Words Followed by prepositions.

UNIT VII: Structural Use of Infinitive, Gerund and Participles.

UNIT VIII: The Participle, the Infinitive, Gerunds.

UNIT IX: Common Errors in English Adjectives and Adverbs (Confused).


UNIT XI: Vocabulary Building in English Language Useful Words for Expressing Ideas. Derivations: Root Words.

UNIT XII: Prefixes and Suffixes, Antonyms and Synonyms, Nationality Words: Names of Countries and People.

Reference Books:-

ITP18---Basic mathematics

Block 1: Introduction to Sets

Objectives, Introduction, Types of Sets, Subsets, Equal Sets, Null Sets, Universal Sets, Finite and Infinite Sets, Open and Closed Sets Operations on Sets, Union of Sets, Intersection of Sets, Complement of Set, Partition of Sets, Cartesian Product of Sets, Cardinality of Sets, Venn-Diagrams, Applications of Sets.

Block 2: Relations and Functions

Functions, One-to-One Functions, Composite Functions, Inverse Functions, Algebraic Functions, Trigonometrical Functions, Logarithmic Functions, Exponential Function, Hyperbolic Functions, Zeroes of Functions.

**Block 3: Introduction to Progressions**

Objectives, Introduction, Arithmetic Progression, nth Term of an Arithmetic Progression, Sum of n Terms of an Arithmetic Progression, Arithmetic Mean, Applications of Arithmetic Progression, Geometric Progression, nth Term of a Geometric Progression Sum of n Terms of a Geometric Progression, Geometric Mean, Applications of Geometric Progression.

**Block 4: Harmonic Progression**

Harmonic Mean, Relation between Arithmetic Mean, Geometric Mean and Harmonic Mean.

**Block 5: Determinants**

Objectives, Introduction, Minors and Cofactors, Properties of Determinants, Rank of a Matrix, Inverse of a Matrix, CRAMER’S RULE

**Block 6: Matrices**

Types of Matrices, Operations on Matrices, Addition of Matrices, Subtraction of Matrices, Vector and Scalar Multiplication of Matrices, Inverse of a Matrix, Eigen Vectors of a Matrix, Caley-Hamilton Theorem.

**Block 7: Differential Calculus**


**Block 8: Differential Calculus Series**

Taylor’s Series, Maclaurin’s Series, Indeterminate Form, Leibnitz Theorem, Curve Tracing.

**Block 9: Integral Calculus**

Objectives, Introduction, Integral as Limit of Sum, Fundamental Theorem of Integral Calculus, Indefinite Integrals, Method of Integration, Substitution Method of Integration, By Parts Method of Integration, Partial Fraction Method of Integration, Integration of Algebraic and Transcendental Function, Gamma and Beta Function.

**Block 10: Multiple Integration**


**Block 11: Functions of Several Variables**

Objective, Introduction, Limits and Continuity, Partial Differentiation, Chain Rule, Euler’s Theorem, Maxima and Minima, Lagrange’s Method of Undetermined Multipliers, Taylor’s Formula.
Block 12: Plane Curves and Polar Coordinates


Block 13: Correlation and Regression

Correlation, Types of Correlation, Karl Pearson’s Coefficient of Correlation, Rank Correlation Method, Spearman’s Rank Correlation Coefficient, Regression, Regression Lines, Application of Regression Lines for Forecasting Sales, Coefficient of Regression

Block 14: Probability and Probability Distribution


Block 15: Logarithms and Progression

Introduction, Logarithms, Laws Of Operations, Compound Interest, Arithmetic Progression, Geometric progression, Annuities.

Block 16: Statistics in Business


ITP19---PRINCIPLES OF MANAGEMENT


UNIT IV: Principles of an Organisation, Formal and Informal Organisation, Span of Control, Departmentation—Meaning, Types of Departmentation, Key Factors in Departmentation, Types of


UNIT V: Types of Authority Introduction, Sources of Authority, Decentralisation of Authority, Distinction Between Delegation and Decentralisation, Factors Determining the Extent of Decentralisation, Advantages of Decentralisation, Limitations of Decentralisation, The Technique of Decentralisation, Organisation Charts.


UNIT IX: Staffing ,Staffing Defined ,Job Analysis ,Manpower Planning ,Recruitment ,Transfers and Promotions ,Appraisals ,Manpower Development ,Job Rotation ,Training ,Rewards and Recognition.


Reference Books: -
1. **Total Quality Management in Education** by Sallis Edward (Associate Principal Brunel College of Technology Bristol) and Edward Sallis (Paperback - May 1, 2002)
2. **What Every Principal Should Know About Operational Leadership** (v. 6) by Jeffrey Glanz (Paperback - Nov 28, 2005)
ITP 20: Operations Research

UNIT 1: Introduction to Operations Research, Concept of Operations Research, Applications and Uses of Operations Research, OR Models and Modeling, OR Techniques, OR and Computers, Advantages of OR, Limitations of OR

UNIT 2: Linear Programming, Meaning of Linear Programming, Formulation of Linear Programming Model, Graphical Solution of a Linear Programming Problem, Simplex Method, Big M Method, Conversion of Primal to Dual Problem, Two Phase Method, Applications of Linear Programming, Sensitivity Analysis


UNIT 4: Transportation and Assignment Problems, Transportation Problem, Trans-shipment, Assignment Problem

UNIT 5: Inventory, Queuing, and Sequencing Models, Concept of Inventory Control, Inventory Models, Queuing Models, Sequencing Model, Markov Analysis

UNIT 6: Project Scheduling, Concept of Project Scheduling, Project Network Analysis, Gantt Chart

UNIT 7: Game Theory and Decision Making, Concept of Game Theory, Types of Strategies in Game Theory, Types of Games, Nash Equilibrium, Prisoners’ Dilemma, Concept of Decision Making

UNIT 8: Simulation, Concept of Simulation, Techniques of Simulation, Computer Simulation

UNIT 9: Replacement Model, Understanding Replacement Models, Replacement of Equipment that Deteriorates with Time, Replacement of Equipment that Fails Completely, Staff Replacement, Limitations of Replacement Models

ITP21---Enterprise Resource Planning

Block 1: Introduction of Management Information System

Block 2: Management Information System (MIS)
Nature and Scope of MIS, Characteristics of MIS, Functions of MIS, Structure of MIS, Physical Components, Information Processing, Management Activities at Various Levels, Decision Support System

Block 3: Strategic Role of MISH
Objectives, Introduction, Strategic MIS, Competitive Advantages with MIS, Customer Relationship Management (CRM), Supply Chain Management (SCM), Enterprise Resource Planning (ERP), Business Process Re-Engineering (BPR), Total Quality Management (TQM)

Block 4: Management of Data Resources
Objectives, Introduction, Concept of Data, Types of Data, Methods of Data Collection, Data Warehousing, Data Mining

**Block 5: Designing Database**

Hierarchical Data Model, Network Data Model, Relational Data Model, Resource Requirement and Procurement

**Block 6: Decision Support Systems**

Objectives, Introduction, Understanding DSS, Problem Solving and Decision Making, Simon’s model of decision making, Types of Decisions, Components of Decision Support System

**Block 7: Types of Decision Support Systems**

Types of Decision Support Systems, Tools and Technologies used in DSS, DSS and Outsourcing.

**Block 8: Introduction to ERP**

Objectives, Introduction, Need for ERP Systems, Basic Concepts of ERP, ERP Model and Modules

**Block 9: Implementation of ERP**

Advantages and Disadvantages of ERP, Comparison between EMS and MIS

**Block 10: ERP and E-Commerce**


**Block 11: ERP and Applications of E-Commerce**

ERP and Challenges of E-Commerce

**Block 12: ERP and Related Technologies**

Introduction, ERP Related Technologies, Online Analytical Processing, Data Mining

**Block 13: Business Intelligence**

Integration of ERP and Related Technologies

**Block 14: Emerging Trends in ERP**

Introduction, Emerging Technologies, ERP Deployment Models, Future of ERP.

**Block 15: Ethical Aspects and Security of Information**

Introduction, Ethics in Information Technology, Ethical Challenges of IT
Block 16: Security of Information


ITP31---Digital Electronics Fundamentals

Unit I

Number System and Codes: Introduction, Number System (Binary Numbers, decimal-binary conversion, Octal Numbers, Octal-Binary Conversions, Hexadecimal Numbers, Hexadecimal-Binary conversions, Hexadecimal-octal conversions), Floating Point Representations of Numbers, Arithmetic Operations (Binary Arithmetic), 1’s and 2’s Compliment (1’s Compliment Subtraction, 2’s Compliment Subtraction , Signed Binary number Representations, Addition in the 2’s compliment System, Subtraction in the 2’s compliment system,

Boolean Algebra: Basic Laws of Boolean algebra (Boolean addition, Boolean Multiplication, Properties of Boolean Algebra, Demorgan theorems, Sum of Products and Product of Sums, (Minterm , Maxterm, Deriving Sum of Products(SOP) Expression from Truth Table, Deriving Product of Sum(POS) Expression from Truth Table, Karnaugh Map (Two variable, Three variable).

Unit II

Logic gates: Logic gates (OR Gate, AND Gate, NOT Gate, NAND Gate, NOR Gate, Ex- OR Gate, Ex-NOR Gate).

Arithmetic Circuits: Half Adder, Full Adder, Half-Subtractor, Full Subtractor, Combinational Circuits: Multiplixers, Basic four input multiplexer, Demultiplexers, 1 to 4 demultiplexer, Decoders, Basic Binary decoder, 3 to 8 decoder, Encoders : Decimal to Binary Encoder.

Unit III

Flip Flops: Introduction, Flip Flops, Types of Flip-Flops, S-R Flip-Flop (NOR Based, NAND Based), Clocked S-R Flip-Flop, D Flip-Flop, J-K Flip-Flop

Memories: Introduction, Classification of memories, Registers, Main Memories and Secondary Memory, Sequential Access Memory And Random Access Memory, Static and Dynamic Memory, Volatile and Non Volatile Memory, Magnetic and Semiconductor Memory, Basic Memory Structure.

ITP22---COMPUTER NETWORKS

UNIT I: Data Communication and System
Introduction, Purpose, Source, Transmitter or Sender, Transmission System, Receiver Destination

UNIT II: Evolution of Communication
Technologies, Components, Data Transmission, Analog and Digital Data Transmission.

UNIT III: Data and Signal
Analog Signaling, Digital Signaling, Frequency Spectrum and Bandwidth.
UNIT IV: Time and Frequency
Domain Concepts, Space-division Multiplexing

UNIT V: Transmission Media,
Introduction, Magnetic Media, Twisted-pair Cables, Base band and Broadband Coaxial, Cables, Fiber Optics

UNIT VI: Computer Networks
LAN Applications and Benefits, Media Access Control, Centralized Control, Decentralized Control.

UNIT VII: Deterministic Access, Nondeterministic Media Access Control, LAN Hardware, Network Interface Card, LAN Operating systems, Transmission Media.


UNIT IX: Networking
Introduction, Networking, Benefits of Networks, Different LAN and WAN Connections, Local Area Networks (LANs), Wide Area Networks (WANs)

UNIT X: Connecting to a Network


UNIT XII: Discretionary Access Control (DAC)
Mandatory Access Control (MAC), Role Based Access Control (RBAC), Access Control Implementation, Security Administration Cost Reductions

Reference Books:
1. Computer Networks (5th Edition) by Andrew S. Tanenbaum and David J. Wetherall
2. Computer Networks by Andrew S. Tanenbaum

ITP23---Management information system


UNIT V: Components of Information Systems, Formal vs. Informal Specifications, Components of Specifications, Using the Systems Approach in Problem Solving, Define the Problem, Gather Data Describing the Problem, Identify Alternative Solutions, Evaluate the Alternatives, Select and Implement the Best Alternatives, Follow up to Determine whether the Solution is Working.


UNIT VII: What is an Organisation? Salient Features of Organisations, Why Organisations are so much Alike: Common Features, Why Organisations are so Different: Unique Features, Organisations and
Environments, Other Differences among Organisations, Business Processes, How Organisations affect Information Systems.


Reference Books:
1. Management Information Systems by Ken Laudon and Jane Laudon

ITP24—SOFTWARE ENGINEERING

UNIT I: Introduction, The process, software products, emergence of software Engineering, evolving role of software

UNIT II: Software Characteristics and application
Software life cycle models, Software Characteristics, Applications, Software crisis

UNIT III: Software project
Software project management: Project management concepts, software process and project metrics
Project planning, project size estimation metrics.

UNIT IV: Software Estimation
Project estimation Techniques, empirical estimation techniques, OCOMO- A Heuristic estimation techniques, staffing level estimation

UNIT V: Risk Analysis
Introduction team structures, staffing, risk analysis and management, project scheduling and tracking.

UNIT VI: Software Requirement
Requirements Analysis and specification requirements engineering, system modeling and simulation
Analysis principles modeling, partitioning Software

UNIT VII: Software Prototyping
Prototyping methods and tools; Specification principles, Representation, the software
Requirements specification and reviews

UNIT VIII: Software Analysis Modeling
Data Modeling, Functional modeling and information flow: Data flow diagrams,
Behavioral Modeling

UNIT IX: Structured Analysis
The mechanics of structured analysis: Creating entity/ relationship diagram, data flow
Model, control flow model, the control and process specification; the data dictionary;
Other classical analysis methods

UNIT X: System Design
Design concepts and principles: the design process: Design and software quality, design principles;
Design concepts: Abstraction, refinement, modularity, software architecture, control hierarchy,
structural partitioning, data structure, software procedure, information hiding.

UNIT XI: Effective modular design
Functional independence, Cohesion, Coupling; Design Heuristics for effective
Modularity; The design model; Design documentation

UNIT XII: Architectural Design
Software architecture, Data Design: Data modeling, data structures, databases and the data
warehouse, analyzing alternative Architectural Designs, architectural complexity;
Mapping requirements into software architecture; transform flow, Transaction flow;
Transform mapping: Refining the architectural design.

Reference Books:
ITP25---INTRODUCTION TO MICROPROCESSOR

Unit I: Evolution of Microprocessor, Internal microprocessor (8086 to Pentium) architecture of 8086; Programming Model, Real mode memory addressing, Introduction to protected mode memory addressing memory paging. Addressing modes: Data, program, Stack, memory-addressing modes

Unit II: Instruction set of 8086, Assembly language programming for 8086 microprocessor, Memory Segmentation.

Unit III: 16 and 32 – bit memory interfacing, various bus protocols like ISA, EISA, VESA, PCI. Architecture Co-processor (8087), programming with 8087, Multi Processor System, Introduction to MMX technology

Unit IV: Introduction to Pentium and its higher generations: architecture, memory management. Assembler, debugger, Introduction to bit Slice processor, Signal processing processor and transputers , Introduction to development tools , MDS , logic analyzer , in-circuit emulator.

Reference Books:


ITP26---DESKTOP PUBLISHING

Unit I

CorelDraw Basics : Introduction; CorelDraw Terminology; Starting CorelDraw 10; CorelDraw Interface; Title Bar; Menu Bar; Tool Box; Drawing Window; Drawing Page; Property Bar; Flyouts; Standard Toolbar; Controlling the display of Toolbars; Working with Docker Windows; The Status Bar; CorelDraw View; Zooming and Planning.

Basic Drawing : Introduction; Working with Lines; Drawing a Curve; Bezier Lines and Curves; Rectangles and Squares; Ellipses and Circles; Polygons and Stars; Selection Techniques; Using Rulers; Using Grids and Guidelines; Defining Grids; Snap to Grid; Defining Guidelines; Snap to Guidelines; Spirals and Graphs; Spirals; Graphs

The Artistic Media Tool : Introduction; Using Preset Tool; Using Brush Tool; Using Object Sprayer Tool; Using Calligraphic Tool; Pressure-Sensitive Lines or Curves; Applying Artistic Media Effects.

Advanced Drawing : Introduction; Grouping and Ungrouping Objects; Working with Layers; Object Locking; Editing Curves with nodes; Editing Shapes and Nodes; Using Knife Tool; Using the Eraser Tool; Using Free Transform Tool.
Working with Text: Creating Artistic Text in Paragraphs; When to use Artistic Text?; Working with Artistic Text; Creating Artistic Text; When to use Paragraph Text?; Creating Paragraph Text; Switching between Artistic and Paragraph Text; The Text Property Bar; Formatting Text; Format Text Dialog Box; Character Formatting; Paragraph Formatting; Setting Tabs; Setting Columns; Using Effects; Using Edit Text Feature; Using Find and Replace; Change Case; Using Spell-Check; Grammar Checking Text; Using Thesaurus.
Advanced Text Work: Fitting Text to Path; Flowing Text around an Object; Flowing Text within an Object; Editing individual Characters; Kerning Individual Characters; Working with Text Styles; Linking Frames.

The Outline Tool: Introduction; Using the Outline Pen Dialog Box; Setting Outline; Outline Styles; Outline Color; Outline Corners; Setting Outline Arrows; Applying Calligraphic Outlines; Setting Outline Options with the Property Bar; Behind Fill Option; Scale with Image Option; Outline Color Dialog Tool; Color Model; Color Harmonies; Color Blend; Setting Outline Defaults.

The Fill Tool: Introduction; Using Uniform Fills; Using Fountain Fills; Using Texture Fills; Using PostScript Fills; Using Pattern Fills; Using Mesh Fills; Using Interactive Fills; Copying Fills; Setting Fill Defaults.

The Interactive Tools: Introduction; Distorting Objects; Push and Pull Distortion; Zipper Distortion; Twister Distortion; Extruding Objects; Blending Objects; Interactive Envelopes; Free Transformations; Applying Interactive Shadow; Applying Interactive Transparency; Applying Interactive Contours.

Unit II

Working with Images: Introduction; Image Formats; Importing Images; Using the Scrapbook; Bitmap Images; Cropping Bitmaps; Bitmap Special Effects; Color Masking; Resizing & Rotating/Skewing Images; Exporting Images.

Page Layout: Introduction; Layout Styles; Define Page Size; Setting the Size; Inserting Pages; Specifying Background Color; Hiding the Page Border; Going to specific Pages.

Printing and Publishing: Introduction; Selecting a Printer; Using Layout Styles when Printing; Tiling a Print Job; Using Print Style; Print to File.
Introduction to Photoshop: What is Photoshop?; New Features of Photoshop 2004 CS; Enhanced File Browser; Easily customize your keyboard shortcuts; Quickly create, view, and edit custom file information; Create slide shows and PDF presentations; Collaborate with Web photo galleries; Track your editing history; Easily access and use multiple filters; Use enhanced scripting; Customize the Help menu; How to Create Web Images; How to Customize and Automate; How to Fix and Enhance Photos; How to Paint and Draw; How to Prepare Art for Other Applications; How to Print Photos; How to work with Color; How to Work with Layers and Selections; How to Work with Type;

Tools of Photoshop

Using Tools; Marquees Tool; Lasso Tool; Cropping Tool; The Airbrush Tool; Clone Stamp Tool; Eraser Tools; Blur and Sharpen Tool; Path Component Selection Tool;

Pen Tool; Notes Tool; Hand Tool; Move Tool; Magic Wand Tool; Slice Tool; Paintbrush Tool; History Brush Tool; Paint Bucket Tool; Dodge Tool; Type Tool; Rectangular Tool;

Eyedropper Tool Zoom Tool; Healing Brush Tool;

Paints and Colors in Photoshop

Use of Paints; Color Tools; Color Picker; the Color Palette; the Swatches Palette;

Adding New Color; Saving Foreground as a Swatch; Blending Modes;

Normal; Dissolve; Multiply; Behind; Screen; Overlay; Hard light; Soft light; Darken; Color Dodge; Color Burn; Lighten; Exclusion; Difference; Hue; Saturation; Color; Luminosity; Smudges; Focus Tools; The Toning Tools; Dodge and Burn Tools; Sponge Tools; Different Media; Watercolor; Oil Painting; Pencil Filters; Chalk and Charcoal Filters; Working with Colors; RGB Model; CYMK Model; HSB Model; CIE Lab; Working Models; Bitmap and Grayscale Mode; Indexed Colors

Unit III

Text, Layers and Masks in Photoshop

Adding Text to Images; Layer Effect; Glows Effect; Bevel and Emboss; Using Layers and Masks; Layers; Creating a New Layer; Hiding and Showing of Layers; Working with Multiple Layers; Merging Layers; Layer Effects; Masks; Quick Mask; Adding Mask to the Layer; Editing Layer Masks; Removing Layer Mask

Special Effects in Photoshop

Applying a Radial Blur; Adding Noise Texture; Creating Halftone Pattern; Blending Modes; Applying Ripple Effect; Creating Lightening Effects

Menu Commands of Photoshop

Introduction; File Menu; Edit Menu; Image Menu; Layer Menu; Select Menu; Filter Menu; View Menu; Window Menu; Help Menu

Keyboard Shortcuts of Photoshop
UNIT I: Overview of Computer Graphics

UNIT II: Display Devices
Introduction, Display Devices, Cathode Ray Tube, Bit-Mapped Graphics, Graphics Attributes, Refresh Cathode Ray Tubes, Random Scan Displays, Raster-Scan Displays

UNIT III: Color CRT Monitors
Direct-View Storage Tubes (DVST), Plasma Panel Displays, Thin Film Electroluminescent displays

UNIT IV: Light Emitting Diode (LED)
Liquid Crystal Displays (LCDs), Hard Copy Output Devices

UNIT V: Transformations
2D translation, scaling, rotation, and shear, Windowing transformations, Instance Transformations, Structured graphics, 3D, translation, scaling, rotation

UNIT VI: 2-D Graphics
Introduction, Scan Conversion, Digital Differential Analyzer, Bresenham's Algorithm, Integer Bresenham's Algorithm, General Bresenham's Algorithm,

UNIT VII: Circle Generation Algorithms
Bresenham's circle generation algorithm, Midpoint Circle Algorithm, Ellipse Generation algorithms, Midpoint Ellipse Algorithm Arc Generation algorithms, Fill Algorithms, Fundamentals of Antialiasing, Dithering

UNIT VIII: Graphics Transformations
Geometric and Coordinate Transformations, Transformation Composition

UNIT IX: View and Clipping
Exterior and Interior Clipping, Viewport Transformation, Polygon Clipping, Text Clipping

UNIT X: 3-D Graphics
Introduction, 3-D Graphics Transformations, Coordinate Transformations

UNIT XI: Projections
Perspective Projection on a Plane with C (0,0,0), Perspective Projection on a Plane with C(a,b,c), Parallel Projections.

UNIT XII: Viewing and Clipping
Hidden Lines and Surfaces Scan line Entries (a) (b) (c) (d).

Reference Books:

1. Fundamentals of Computer Graphics by Peter Shirley, Michael Ashikhmin and Steve Marschner

ITP33---Practical-ITP12

ITP34---PRESENTATION/SEMINAR

ITP35---PROJECT PROGRAM WORK

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