**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2016-17

**Class:-** B.Sc. (C.Sc.)III Sem.

**Subject:-** STRUCTURED SYSTEM ANALYSIS AND DESIGN

**Month of January:-**

System Concept: Definition, Characteristics, Elements of system, Physical and abstract system, open and closed system, man-made information systems. System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success. Role of system analyst.

**Month of February:-**

System Planning: Bases for planning in system analysis: Dimensions of Planning. Initial Investigation: Determining user’s requirements and analysis, fact finding process and techniques. Tools of structured Analysis: Data Flow diagram, data dictionary, IPO and HIPO charts, Gantt charts, pseudo codes, Flow charts, decision tree, decision tables.Feasibility study: Technical, Operational & Economic Feasibilities.

**Month of March:-**

 Cost/Benefit Analysis: Data analysis cost and benefit analysis of a system. Input/ Output and Form Design, File Organization and database design: Introduction to files and database, File structures and organization, objectives of database design, logical and physical view of data.

**Month of April:-**

System testing: Introduction, objectives of testing, test planning, testing techniques.Quality assurance: Goal of quality assurance, levels of quality assurance System implementation and software maintenance: primary activities in maintenance, reducing maintenance costs.

Teacher Name:- Sona Devi

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2016-17

**Class:-** B.Sc. (C.Sc.)III Sem.

**Subject:-** **PAPER – I DATA STRUCTURES USING ‘C’**

**Month of January:-**

The concept of data structure, Abstract data type, data structure operations, algorithms complexity, time-space tradeoff. Introduction to strings, storing strings, string operations, pattern matching algorithms.

**Month of February:-**

Linked list: Introduction and basic operations, Header nodes, Doubly Linked List, Circular Linked List, Applications of Linked List. Stack: primitive operation on stack, Representation of Stack as Linked List and array, Stacks applications.

**Month of March:-**

Introduction to queues, Primitive Operations on the Queues, Circular queue, Priority queue, Representation of Queues as Linked List and array, Applications of queue.Trees - Basic Terminology, Binary Trees, Tree Representations using Array & Linked List, Basic operation on Binary tree, Traversal of binary trees:- In order, Preorder & post order, Applications of Binary tree.

**Month of April:-**

Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs.Searching: linear search, Binary search, Sorting: Insertion sort, Selection sort, Quick sort, Bubble sort.

Teacher Name:- Sona Devi

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2016-17

**Class:-** B.Sc. (C.Sc.)I Sem.

**Subject:-** **Computer Fundamentals and Programming in ‘C’**

**Month of January:-**

Computer Fundamentals: Definition, Block Diagram along with its components, characteristics & classification of computers.

Computer hardware & software: Definition of software, relationship between hardware and software, types of software.

Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.

Techniques of Problem Solving: Flowcharting, algorithms, pseudo code, decision table, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.

**Month of February:-**

Overview of C: History of C, Importance of C, Structure of a C Program.

Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant.

Input/output: Unformatted & formatted I/O function, Input functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putch(), putchar(), puts().

Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity.

**Month of March:-**

Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement.

Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement.

**Month of April:-**

Functions: Definition, prototype, passing parameters, recursion.

Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime.

Arrays: Definition, types, initialization, processing an array, Strings & arrays.

Teacher Name:- Dr. Navpreet Kaur

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2016-17

**Class:-** B.Sc. (C.Sc.)I Sem.

**Subject:-** Logical Organization of Computer-I

**Month of January:-**

Information Representation: Number Systems, Binary Arithmetic, Fixed-point and Floating-point representation of numbers, BCD Codes, Error detecting and correcting codes, Character Representation – ASCII, EBCDIC, Unicode

**Month of February:-**

Binary Logic: Boolean Algebra, Boolean Theorems, Boolean Functions and Truth Tables, Canonical and Standard forms of Boolean functions, Simplification of Boolean Functions – Venn Diagram, Karnaugh Maps.

**Month of March:-**

Digital Logic: Basic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR, XNOR etc. NAND, NOR, AND-OR-INVERT and OR-AND-INVERT implementations of digital circuits, Combinational Logic – Characteristics, Design Procedures, analysis procedures, Multilevel NAND and NOR circuits.

**Month of April:-**

Combinational Circuits: Half-Adder, Full-Adder, Half-Subtractor, Full-Subtractor, Encoders, Decoders, Multiplexers, Demultiplexers, Comparators, Code Converters, BCD to Seven-Segment Decoder.

Teacher Name:- Navpreet Kaur

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2016-17

**Class:-** B.Sc. (C.Sc.)V Sem.

**Subject:-** Programming in ‘C++’

**Month of January:-**

Introduction to Programming C++: Object-Oriented Features of C++, Class and Objects,

Data Hiding & Encapsulation, Structures, Data members and Member functions, Inline

Functions, Static Data Members and Member Functions, Friend Functions, Preprocessor

Directives, Namespace, Comparing C with C++.

**Month of February:-**

 Constructors & Destructors: Roles and types of Constructors, Roles of Destructors,

Dynamic Memory Allocation: Pointers and their Manipulation, new and delete Operators

‘this’ Pointer.Console I/O: Formatted and Unformatted I/O, Manipulators

**Month of March:-**

Compile-Time Polymorphism: Unary and Binary Operators overloading through Member

Functions and Friend Functions, Function Overloading.

Inheritance: Types of Derivations, Forms of Inheritance, Roles of Constructors and

Destructors in Inheritance.

**Month of April:-**

 Genericity in C++: Template Function, Template Class, Inheritance and Templates.

Exception Handling: try, throw and catch constructs, rethrowing an exception, catch all

Handlers.

Teacher Name:- Dr. Navpreet Kaur

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2016-17

**Class:-** B.Sc. C.Sc.)V Sem.

**Subject:-** Introduction to Data Base Systems

**Month of January:-**

Basic Concepts – Data, Information, Records and files. Traditional file –based Systems-File

Based Approach-Limitations of File Based Approach, Database Approach-Characteristics of

Database Approach, Database Management System (DBMS), Components of DBMS

Environment, DBMS Functions and Components, Advantages and Disadvantages of

DBMS. Roles in the Database Environment - Data and Database Administrator, Database

Designers, Applications Developers and Users.

**Month of February:-**

Database System Architecture – Three Levels of Architecture, External, Conceptual and Internal Levels, Schemas, Mappings and Instances.Data Independence – Logical and Physical Data Independence. nClassification of Database Management System, Centralized and Client Server architecture to DBMS.Data Models: Records- based Data Models, Object-based Data Models, Physical Data Models and Conceptual Modeling.

**Month of March:-**

Entity-Relationship Model – Entity Types, Entity Sets, Attributes Relationship Types Relationship Instances and ER Diagrams.Basic Concepts of Hierarchical and Network Data Model

**Month of April:-**

Relational Data Model:-Brief History, Relational Model Terminology-Relational Data

Structure, Database Relations, Properties of Relations, Keys, Domains, Integrity Constraints

over Relations, Base Tables and Views.

Teacher Name:- Sona Devi

Dept.:- Computer Science

**Lesson Plan 2016-17(Even Semester)**

**Subject – OPERATING SYSTEMS(IV)**

**Month of January**

**UNIT – I**

Introductory Concepts: Operating system functions and characteristics, historical evolution of

operating systems, Real time systems, Distributed systems, Methodologies for implementation of

O/S service system calls, system programs.

**Month of February**

**UNIT – II**

Process management: Process concepts, Process states and Process Control Block.

CPU Scheduling: Scheduling criteria, Levels of Scheduling, Scheduling algorithms, Multiple

processor scheduling.

Deadlocks: Deadlock characterization, Deadlock prevention and avoidance, Deadlock detection

and recovery, practical considerations.

**Month of March**

**UNIT – III**

Concurrent Processes: Critical section problem, Semaphores, Classical process co-ordination

problems and their solutions, Inter-process Communications.

Storage Management: memory management of single-user and multiuser operating system,

partitioning, swapping, paging and segmentation, virtual memory, Page replacement Algorithms,

Thrashing.

**Month of April**

**UNIT – IV**

Device and file management: Disk scheduling, Disk structure, Disk management, File Systems:

Functions of the system, File access and allocation methods, Directory Systems: Structured

Organizations, directory and file protection mechanisms.

**Teacher Name: Sona Devi**

**Lesson Plan 2016-17(Even Semester)**

**Subject-- PROGRAMMING IN VISUAL BASIC(IV)**

**Month of January**

**UNIT – I**

Introduction to VB: Visual & non-visual programming, Procedural, Object-oriented and eventdriven

programming languages, The VB environment: Menu bar, Toolbar, Project explorer,

Toolbox, Properties window, Form designer, Form layout, Immediate window. Visual

Development and Event Driven programming.

**Month of February**

**UNIT – II**

Basics of Programming: Variables: Declaring variables, Types of variables, Converting variables

types, User-defined data types, Forcing variable declaration, Scope & lifetime of variables.

Constants: Named & intrinsic. Operators: Arithmetic, Relational & Logical operators. I/O in VB:

Various controls for I/O in VB, Message box, Input Box, Print statement.

**Month of March**

**UNIT – III**

Programming with VB: Decisions and conditions: If statement, If-then-else, Select-case. Looping

statements: Do-loops, For-next, While-wend, Exit statement. Nested control structures. Arrays:

Declaring and using arrays, one-dimensional and multi-dimensional arrays, Static & dynamic arrays,

Arrays of array. Collections: Adding, Removing, Counting, Returning items in a collection,

Processing a collection.

**Month of April**

**UNIT – IV**

Programming with VB: Procedures: General & event procedures, Subroutines, Functions, Calling

procedures, Arguments- passing mechanisms, Optional arguments, Named arguments, Functions

returning custom data types, Functions returning arrays.

Working with forms: Adding multiple forms in VB, Hiding & showing forms, Load & unload

statements, Activate & deactivate events, Form-load event, menu designing in VB

Simple programs in VB.

Teacher Name:-Sona Devi

**Lesson Plan 2016-17(Even Semester)**

**Subject – VI RELATIONAL DATABASE MANAGEMENT SYSTEM**

**Month of January**

**UNIT – I**

Relational Model Concepts, Codd's Rules for Relational Model,

Relational Algebra:-Selection and Projection, Set Operation, Renaming, Join and Division.

Relational Calculus: Tuple Relational Calculus and Domain Relational Calculus.

**Month of February**

**UNIT – II**

Functional Dependencies and Normalization:-Purpose, Data Redundancy and Update Anomalies.

Functional Dependencies:-Full Functional Dependencies and Transitive Functional Dependencies,

Characteristics of Functional Dependencies.

Decomposition and Normal Forms (1NF, 2NF, 3NF & BCNF).

**Month of March**

**UNIT – III**

SQL: Data Definition and data types, Specifying Constraints in SQL, Schema, Change statement,

Basic Queries in SQL, Insert, Delete and Update Statements, Views.

**Month of April**

**UNIT – IV**

PL/SQL-Introduction, Advantages of PL/SQL,

The Generic PL/SQL Block: PL/SQL Execution Environment,

PL/SQL Character set and Data Types,

Control Structure in PL/SQL.

Teacher Name:-Sona Devi

**Lesson Plan 2016-17(Even Semester)**

**Subject-- COMPUTER NETWORKS(VI)**

**Month of January**

**Unit-I**

Introduction to Computer Communications and Networking Technologies; Uses of Computer

Networks; Network Devices, Nodes, and Hosts; Types of Computer Networks and their

Topologies; Network Software: Network Design issues and Protocols; Connection-Oriented and

Connectionless Services; Network Applications and Application Protocols; Computer

Communications and Networking Models: Decentralized and Centralized Systems, Distributed

Systems, Client/Server Model, Peer-to-Peer Model, Web-Based Model, Network Architecture and

the OSI Reference Model; Example Networks: The Internet, X.25, Frame Relay, ATM;

**Month of February**

**UNIT – II**

Analog and Digital Communications Concepts: Representing Data as Analog Signals, Representing

Data as Digital Signals, Data Rate and Bandwidth, Capacity, Baud Rate; Digital Carrier Systems;

Guided and Wireless Transmission Media; Communication Satellites; Switching and Multiplexing;

Dialup Networking; Analog Modem Concepts; DSL Service;

**Month of March**

**UNIT – III**

Data Link Layer: Framing, Flow Control, Error Control; Error Detection and Correction; Sliding

Window Protocols; Media Access Control: Random Access Protocols, Token Passing Protocols;

Token Ring; Introduction to LAN technologies: Ethernet, switched Ethernet, VLAN, fast

Ethernet, gigabit Ethernet, token ring, FDDI, Wireless LANs; Bluetooth;

Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface

Cards and PC Cards, Bridges, Switches, Routers, Gateways;

**Month of April**

**UNIT – IV**

Network Layer and Routing Concepts: Virtual Circuits and Datagrams; Routing Algorithms;

Congestion Control Algorithms; Internetworking;

Network Security Issues: Security threats; Encryption Methods; Authentication; Symmetric –Key

Algorithms; Public-Key Algorithms.

Teacher Name :- Dr. Navpreet Kaur

**Lesson Plan 2016-17(Even Semester)**

**Subject—PC Software(II)**

**Month of January**

**Unit-I**

MS-Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel – display properties, adding and removing software and hardware, setting date and time, screensaver and appearance. Using windows accessories.

**Month of February**

**UNIT – II**

## Documentation Using MS-Word - Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Advance Features of MS-Word-Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object, Template.

**Month of March**

**UNIT – III**

Electronic Spread Sheet using MS-Excel - Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Advance features of MS-Excel-Pivot table & Pivot Chart, Linking and Consolidation, Database Management using Excel-Sorting, Filtering, Table, Validation, Goal Seek, Scenario.

**Month of April**

**UNIT – IV**

## Presentation using MS-PowerPoint: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.

Teacher Name: Dr. Navpreet Kaur

**Lesson Plan 2016-17(Even Semester)**

**Logical Organization of Computer-II (II)**

**Month of January**

# Unit I

Sequential Logic: Characteristics, Flip-Flops, Clocked RS, D type, JK, T type and Master-Slave flip-flops. State table, state diagram and state equations. Flip-flop excitation tables

**Month of February**

# Unit II

Sequential Circuits: Designing registers – Serial Input Serial Output (SISO), Serial Input Parallel Output (SIPO), Parallel Input Serial Output (PISO), Parallel Input Parallel Output (PIPO) and shift registers. Designing counters – Asynchronous and Synchronous Binary Counters, Modulo-N Counters and Up-Down Counters

**Month of March**

# Unit III

Memory & I/O Devices: Memory Parameters, Semiconductor RAM, ROM, Magnetic and Optical Storage devices, Flash memory, I/O Devices and their controllers.

**Month of April**

# Unit IV

Instruction Design & I/O Organization: Machine instruction, Instruction set selection, Instruction cycle, Instruction Format and Addressing Modes. I/O Interface, Interrupt structure, Program-controlled, Interrupt-controlled & DMA transfer, I/O Channels, IOP.

Teacher Name: Dr. Navpreet Kaur

**Lesson Plan**

**Session :-** 2017-18

**Class:-** B.Sc. (C.Sc.)III Sem.

**Subject:-** STRUCTURED SYSTEM ANALYSIS AND DESIGN

**Month of January:-**

System Concept: Definition, Characteristics, Elements of system, Physical and abstract system, open and closed system, man-made information systems. System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success. Role of system analyst.

**Month of February:-**

System Planning: Bases for planning in system analysis: Dimensions of Planning. Initial Investigation: Determining user’s requirements and analysis, fact finding process and techniques. Tools of structured Analysis: Data Flow diagram, data dictionary, IPO and HIPO charts, Gantt charts, pseudo codes, Flow charts, decision tree, decision tables.Feasibility study: Technical, Operational & Economic Feasibilities.

**Month of March:-**

 Cost/Benefit Analysis: Data analysis cost and benefit analysis of a system. Input/ Output and Form Design, File Organization and database design: Introduction to files and database, File structures and organization, objectives of database design, logical and physical view of data.

**Month of April:-**

System testing: Introduction, objectives of testing, test planning, testing techniques.Quality assurance: Goal of quality assurance, levels of quality assurance System implementation and software maintenance: primary activities in maintenance, reducing maintenance costs.

Teacher Name:- Sona Devi

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2017-18

**Class:-** B.Sc. (C.Sc.)III Sem.

**Subject:-** **PAPER – I DATA STRUCTURES USING ‘C’**

**Month of January:-**

The concept of data structure, Abstract data type, data structure operations, algorithms complexity, time-space tradeoff. Introduction to strings, storing strings, string operations, pattern matching algorithms.

**Month of February:-**

Linked list: Introduction and basic operations, Header nodes, Doubly Linked List, Circular Linked List, Applications of Linked List. Stack: primitive operation on stack, Representation of Stack as Linked List and array, Stacks applications.

**Month of March:-**

Introduction to queues, Primitive Operations on the Queues, Circular queue, Priority queue, Representation of Queues as Linked List and array, Applications of queue.Trees - Basic Terminology, Binary Trees, Tree Representations using Array & Linked List, Basic operation on Binary tree, Traversal of binary trees:- In order, Preorder & post order, Applications of Binary tree.

**Month of April:-**

Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs.Searching: linear search, Binary search, Sorting: Insertion sort, Selection sort, Quick sort, Bubble sort.

Teacher Name:- Sona Devi

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2017-18

**Class:-** B.Sc. (C.Sc.)I Sem.

**Subject:-** **Computer Fundamentals and Programming in ‘C’**

**Month of January:-**

Computer Fundamentals: Definition, Block Diagram along with its components, characteristics & classification of computers.

Computer hardware & software: Definition of software, relationship between hardware and software, types of software.

Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.

Techniques of Problem Solving: Flowcharting, algorithms, pseudo code, decision table, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.

**Month of February:-**

Overview of C: History of C, Importance of C, Structure of a C Program.

Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant.

Input/output: Unformatted & formatted I/O function, Input functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putch(), putchar(), puts().

Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity.

**Month of March:-**

Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement.

Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement.

**Month of April:-**

Functions: Definition, prototype, passing parameters, recursion.

Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime.

Arrays: Definition, types, initialization, processing an array, Strings & arrays.

Teacher Name:- Dr. Navpreet Kaur

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2017-18

**Class:-** B.Sc. (C.Sc.)I Sem.

**Subject:-** Logical Organization of Computer-I

**Month of January:-**

Information Representation: Number Systems, Binary Arithmetic, Fixed-point and Floating-point representation of numbers, BCD Codes, Error detecting and correcting codes, Character Representation – ASCII, EBCDIC, Unicode

**Month of February:-**

Binary Logic: Boolean Algebra, Boolean Theorems, Boolean Functions and Truth Tables, Canonical and Standard forms of Boolean functions, Simplification of Boolean Functions – Venn Diagram, Karnaugh Maps.

**Month of March:-**

Digital Logic: Basic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR, XNOR etc. NAND, NOR, AND-OR-INVERT and OR-AND-INVERT implementations of digital circuits, Combinational Logic – Characteristics, Design Procedures, analysis procedures, Multilevel NAND and NOR circuits.

**Month of April:-**

Combinational Circuits: Half-Adder, Full-Adder, Half-Subtractor, Full-Subtractor, Encoders, Decoders, Multiplexers, Demultiplexers, Comparators, Code Converters, BCD to Seven-Segment Decoder.

Teacher Name:- Navpreet Kaur

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2017-18

**Class:-** B.Sc. (C.Sc.)V Sem.

**Subject:-** Programming in ‘C++’

**Month of January:-**

Introduction to Programming C++: Object-Oriented Features of C++, Class and Objects,

Data Hiding & Encapsulation, Structures, Data members and Member functions, Inline

Functions, Static Data Members and Member Functions, Friend Functions, Preprocessor

Directives, Namespace, Comparing C with C++.

**Month of February:-**

 Constructors & Destructors: Roles and types of Constructors, Roles of Destructors,

Dynamic Memory Allocation: Pointers and their Manipulation, new and delete Operators

‘this’ Pointer.Console I/O: Formatted and Unformatted I/O, Manipulators

**Month of March:-**

Compile-Time Polymorphism: Unary and Binary Operators overloading through Member

Functions and Friend Functions, Function Overloading.

Inheritance: Types of Derivations, Forms of Inheritance, Roles of Constructors and

Destructors in Inheritance.

**Month of April:-**

 Genericity in C++: Template Function, Template Class, Inheritance and Templates.

Exception Handling: try, throw and catch constructs, rethrowing an exception, catch all

Handlers.

Teacher Name:- Dr. Navpreet Kaur

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2017-18

**Class:-** B.Sc. C.Sc.V Sem.

**Subject:-** Introduction to Data Base Systems

**Month of January:-**

Basic Concepts – Data, Information, Records and files. Traditional file –based Systems-File

Based Approach-Limitations of File Based Approach, Database Approach-Characteristics of

Database Approach, Database Management System (DBMS), Components of DBMS

Environment, DBMS Functions and Components, Advantages and Disadvantages of

DBMS. Roles in the Database Environment - Data and Database Administrator, Database

Designers, Applications Developers and Users.

**Month of February:-**

Database System Architecture – Three Levels of Architecture, External, Conceptual and Internal Levels, Schemas, Mappings and Instances.Data Independence – Logical and Physical Data Independence. nClassification of Database Management System, Centralized and Client Server architecture to DBMS.Data Models: Records- based Data Models, Object-based Data Models, Physical Data Models and Conceptual Modeling.

**Month of March:-**

Entity-Relationship Model – Entity Types, Entity Sets, Attributes Relationship Types Relationship Instances and ER Diagrams.Basic Concepts of Hierarchical and Network Data Model

**Month of April:-**

Relational Data Model:-Brief History, Relational Model Terminology-Relational Data

Structure, Database Relations, Properties of Relations, Keys, Domains, Integrity Constraints

over Relations, Base Tables and Views.

Teacher Name:- Sona Devi

Dept.:- Computer Science

**Lesson Plan** 2017-18 **(Even Semester)**

**Subject – OPERATING SYSTEMS(IV)**

**Month of January**

**UNIT – I**

Introductory Concepts: Operating system functions and characteristics, historical evolution of

operating systems, Real time systems, Distributed systems, Methodologies for implementation of

O/S service system calls, system programs.

**Month of February**

**UNIT – II**

Process management: Process concepts, Process states and Process Control Block.

CPU Scheduling: Scheduling criteria, Levels of Scheduling, Scheduling algorithms, Multiple

processor scheduling.

Deadlocks: Deadlock characterization, Deadlock prevention and avoidance, Deadlock detection

and recovery, practical considerations.

**Month of March**

**UNIT – III**

Concurrent Processes: Critical section problem, Semaphores, Classical process co-ordination

problems and their solutions, Inter-process Communications.

Storage Management: memory management of single-user and multiuser operating system,

partitioning, swapping, paging and segmentation, virtual memory, Page replacement Algorithms,

Thrashing.

**Month of April**

**UNIT – IV**

Device and file management: Disk scheduling, Disk structure, Disk management, File Systems:

Functions of the system, File access and allocation methods, Directory Systems: Structured

Organizations, directory and file protection mechanisms.

**Teacher Name: Sona Devi**

**Lesson Plan** 2017-18

 **(Even Semester)**

**Subject-- PROGRAMMING IN VISUAL BASIC(IV)**

**Month of January**

**UNIT – I**

Introduction to VB: Visual & non-visual programming, Procedural, Object-oriented and eventdriven

programming languages, The VB environment: Menu bar, Toolbar, Project explorer,

Toolbox, Properties window, Form designer, Form layout, Immediate window. Visual

Development and Event Driven programming.

**Month of February**

**UNIT – II**

Basics of Programming: Variables: Declaring variables, Types of variables, Converting variables

types, User-defined data types, Forcing variable declaration, Scope & lifetime of variables.

Constants: Named & intrinsic. Operators: Arithmetic, Relational & Logical operators. I/O in VB:

Various controls for I/O in VB, Message box, Input Box, Print statement.

**Month of March**

**UNIT – III**

Programming with VB: Decisions and conditions: If statement, If-then-else, Select-case. Looping

statements: Do-loops, For-next, While-wend, Exit statement. Nested control structures. Arrays:

Declaring and using arrays, one-dimensional and multi-dimensional arrays, Static & dynamic arrays,

Arrays of array. Collections: Adding, Removing, Counting, Returning items in a collection,

Processing a collection.

**Month of April**

**UNIT – IV**

Programming with VB: Procedures: General & event procedures, Subroutines, Functions, Calling

procedures, Arguments- passing mechanisms, Optional arguments, Named arguments, Functions

returning custom data types, Functions returning arrays.

Working with forms: Adding multiple forms in VB, Hiding & showing forms, Load & unload

statements, Activate & deactivate events, Form-load event, menu designing in VB

Simple programs in VB.

Teacher Name:-Sona Devi

**Lesson Plan** 2017-18**(Even Semester)**

**Subject – VI RELATIONAL DATABASE MANAGEMENT SYSTEM**

**Month of January**

**UNIT – I**

Relational Model Concepts, Codd's Rules for Relational Model,

Relational Algebra:-Selection and Projection, Set Operation, Renaming, Join and Division.

Relational Calculus: Tuple Relational Calculus and Domain Relational Calculus.

**Month of February**

**UNIT – II**

Functional Dependencies and Normalization:-Purpose, Data Redundancy and Update Anomalies.

Functional Dependencies:-Full Functional Dependencies and Transitive Functional Dependencies,

Characteristics of Functional Dependencies.

Decomposition and Normal Forms (1NF, 2NF, 3NF & BCNF).

**Month of March**

**UNIT – III**

SQL: Data Definition and data types, Specifying Constraints in SQL, Schema, Change statement,

Basic Queries in SQL, Insert, Delete and Update Statements, Views.

**Month of April**

**UNIT – IV**

PL/SQL-Introduction, Advantages of PL/SQL,

The Generic PL/SQL Block: PL/SQL Execution Environment,

PL/SQL Character set and Data Types,

Control Structure in PL/SQL.

Teacher Name:-Dr. Navpreet Kaur

**Lesson Plan** 2017-18

 **(Even Semester)**

**Subject-- COMPUTER NETWORKS(VI)**

**Month of January**

**Unit-I**

Introduction to Computer Communications and Networking Technologies; Uses of Computer

Networks; Network Devices, Nodes, and Hosts; Types of Computer Networks and their

Topologies; Network Software: Network Design issues and Protocols; Connection-Oriented and

Connectionless Services; Network Applications and Application Protocols; Computer

Communications and Networking Models: Decentralized and Centralized Systems, Distributed

Systems, Client/Server Model, Peer-to-Peer Model, Web-Based Model, Network Architecture and

the OSI Reference Model; Example Networks: The Internet, X.25, Frame Relay, ATM;

**Month of February**

**UNIT – II**

Analog and Digital Communications Concepts: Representing Data as Analog Signals, Representing

Data as Digital Signals, Data Rate and Bandwidth, Capacity, Baud Rate; Digital Carrier Systems;

Guided and Wireless Transmission Media; Communication Satellites; Switching and Multiplexing;

Dialup Networking; Analog Modem Concepts; DSL Service;

**Month of March**

**UNIT – III**

Data Link Layer: Framing, Flow Control, Error Control; Error Detection and Correction; Sliding

Window Protocols; Media Access Control: Random Access Protocols, Token Passing Protocols;

Token Ring; Introduction to LAN technologies: Ethernet, switched Ethernet, VLAN, fast

Ethernet, gigabit Ethernet, token ring, FDDI, Wireless LANs; Bluetooth;

Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface

Cards and PC Cards, Bridges, Switches, Routers, Gateways;

**Month of April**

**UNIT – IV**

Network Layer and Routing Concepts: Virtual Circuits and Datagrams; Routing Algorithms;

Congestion Control Algorithms; Internetworking;

Network Security Issues: Security threats; Encryption Methods; Authentication; Symmetric –Key Algorithms; Public-Key Algorithms.

Teacher Name :- Dr. Navpreet Kaur

**Lesson Plan** 2017-18

**(Even Semester)**

**Subject—PC Software(II)**

**Month of January**

**Unit-I**

MS-Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel – display properties, adding and removing software and hardware, setting date and time, screensaver and appearance. Using windows accessories.

**Month of February**

**UNIT – II**

## Documentation Using MS-Word - Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Advance Features of MS-Word-Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object, Template.

**Month of March**

**UNIT – III**

Electronic Spread Sheet using MS-Excel - Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Advance features of MS-Excel-Pivot table & Pivot Chart, Linking and Consolidation, Database Management using Excel-Sorting, Filtering, Table, Validation, Goal Seek, Scenario.

**Month of April**

**UNIT – IV**

## Presentation using MS-PowerPoint: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.

Teacher Name: Dr. Navpreet Kaur

**Lesson Plan 2017-18 (Even Semester)**

**Logical Organization of Computer-II (II)**

**Month of January**

# Unit I

Sequential Logic: Characteristics, Flip-Flops, Clocked RS, D type, JK, T type and Master-Slave flip-flops. State table, state diagram and state equations. Flip-flop excitation tables

**Month of February**

# Unit II

Sequential Circuits: Designing registers – Serial Input Serial Output (SISO), Serial Input Parallel Output (SIPO), Parallel Input Serial Output (PISO), Parallel Input Parallel Output (PIPO) and shift registers. Designing counters – Asynchronous and Synchronous Binary Counters, Modulo-N Counters and Up-Down Counters

**Month of March**

# Unit III

Memory & I/O Devices: Memory Parameters, Semiconductor RAM, ROM, Magnetic and Optical Storage devices, Flash memory, I/O Devices and their controllers.

**Month of April**

# Unit IV

Instruction Design & I/O Organization: Machine instruction, Instruction set selection, Instruction cycle, Instruction Format and Addressing Modes. I/O Interface, Interrupt structure, Program-controlled, Interrupt-controlled & DMA transfer, I/O Channels, IOP.

Teacher Name: Sona Devi

**Lesson Plan**

**Session :-** 2018-19

**Class:-** B.Sc. (C.Sc.)III Sem.

**Subject:-** STRUCTURED SYSTEM ANALYSIS AND DESIGN

**Month of January:-**

System Concept: Definition, Characteristics, Elements of system, Physical and abstract system, open and closed system, man-made information systems. System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success. Role of system analyst.

**Month of February:-**

System Planning: Bases for planning in system analysis: Dimensions of Planning. Initial Investigation: Determining user’s requirements and analysis, fact finding process and techniques. Tools of structured Analysis: Data Flow diagram, data dictionary, IPO and HIPO charts, Gantt charts, pseudo codes, Flow charts, decision tree, decision tables.Feasibility study: Technical, Operational & Economic Feasibilities.

**Month of March:-**

 Cost/Benefit Analysis: Data analysis cost and benefit analysis of a system. Input/ Output and Form Design, File Organization and database design: Introduction to files and database, File structures and organization, objectives of database design, logical and physical view of data.

**Month of April:-**

System testing: Introduction, objectives of testing, test planning, testing techniques.Quality assurance: Goal of quality assurance, levels of quality assurance System implementation and software maintenance: primary activities in maintenance, reducing maintenance costs.

Teacher Name:- Sona Devi

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2018-19

**Class:-** B.Sc. (C.Sc.)III Sem.

**Subject:-** **PAPER – I DATA STRUCTURES USING ‘C’**

**Month of January:-**

The concept of data structure, Abstract data type, data structure operations, algorithms complexity, time-space tradeoff. Introduction to strings, storing strings, string operations, pattern matching algorithms.

**Month of February:-**

Linked list: Introduction and basic operations, Header nodes, Doubly Linked List, Circular Linked List, Applications of Linked List. Stack: primitive operation on stack, Representation of Stack as Linked List and array, Stacks applications.

**Month of March:-**

Introduction to queues, Primitive Operations on the Queues, Circular queue, Priority queue, Representation of Queues as Linked List and array, Applications of queue.Trees - Basic Terminology, Binary Trees, Tree Representations using Array & Linked List, Basic operation on Binary tree, Traversal of binary trees:- In order, Preorder & post order, Applications of Binary tree.

**Month of April:-**

Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs.Searching: linear search, Binary search, Sorting: Insertion sort, Selection sort, Quick sort, Bubble sort.

Teacher Name:- Sona Devi

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2018-19

**Class:-** B.Sc. (C.Sc.)V Sem.

**Subject:-** Programming in ‘C++’

**Month of January:-**

Introduction to Programming C++: Object-Oriented Features of C++, Class and Objects,

Data Hiding & Encapsulation, Structures, Data members and Member functions, Inline

Functions, Static Data Members and Member Functions, Friend Functions, Preprocessor

Directives, Namespace, Comparing C with C++.

**Month of February:-**

 Constructors & Destructors: Roles and types of Constructors, Roles of Destructors,

Dynamic Memory Allocation: Pointers and their Manipulation, new and delete Operators

‘this’ Pointer.Console I/O: Formatted and Unformatted I/O, Manipulators

**Month of March:-**

Compile-Time Polymorphism: Unary and Binary Operators overloading through Member

Functions and Friend Functions, Function Overloading.

Inheritance: Types of Derivations, Forms of Inheritance, Roles of Constructors and

Destructors in Inheritance.

**Month of April:-**

 Genericity in C++: Template Function, Template Class, Inheritance and Templates.

Exception Handling: try, throw and catch constructs, rethrowing an exception, catch all

Handlers.

Teacher Name:- Dr. Navpreet Kaur

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2018-19

**Class:-** B.Sc. C.Sc.V Sem.

**Subject:-** Introduction to Data Base Systems

**Month of January:-**

Basic Concepts – Data, Information, Records and files. Traditional file –based Systems-File

Based Approach-Limitations of File Based Approach, Database Approach-Characteristics of

Database Approach, Database Management System (DBMS), Components of DBMS

Environment, DBMS Functions and Components, Advantages and Disadvantages of

DBMS. Roles in the Database Environment - Data and Database Administrator, Database

Designers, Applications Developers and Users.

**Month of February:-**

Database System Architecture – Three Levels of Architecture, External, Conceptual and Internal Levels, Schemas, Mappings and Instances.Data Independence – Logical and Physical Data Independence. nClassification of Database Management System, Centralized and Client Server architecture to DBMS.Data Models: Records- based Data Models, Object-based Data Models, Physical Data Models and Conceptual Modeling.

**Month of March:-**

Entity-Relationship Model – Entity Types, Entity Sets, Attributes Relationship Types Relationship Instances and ER Diagrams.Basic Concepts of Hierarchical and Network Data Model

**Month of April:-**

Relational Data Model:-Brief History, Relational Model Terminology-Relational Data

Structure, Database Relations, Properties of Relations, Keys, Domains, Integrity Constraints

over Relations, Base Tables and Views.

Teacher Name:- Sona Devi

Dept.:- Computer Science

**Lesson Plan** 2018-19

 **(Even Semester)**

**Subject – OPERATING SYSTEMS(IV)**

**Month of January**

**UNIT – I**

Introductory Concepts: Operating system functions and characteristics, historical evolution of

operating systems, Real time systems, Distributed systems, Methodologies for implementation of

O/S service system calls, system programs.

**Month of February**

**UNIT – II**

Process management: Process concepts, Process states and Process Control Block.

CPU Scheduling: Scheduling criteria, Levels of Scheduling, Scheduling algorithms, Multiple

processor scheduling.

Deadlocks: Deadlock characterization, Deadlock prevention and avoidance, Deadlock detection

and recovery, practical considerations.

**Month of March**

**UNIT – III**

Concurrent Processes: Critical section problem, Semaphores, Classical process co-ordination

problems and their solutions, Inter-process Communications.

Storage Management: memory management of single-user and multiuser operating system,

partitioning, swapping, paging and segmentation, virtual memory, Page replacement Algorithms,

Thrashing.

**Month of April**

**UNIT – IV**

Device and file management: Disk scheduling, Disk structure, Disk management, File Systems:

Functions of the system, File access and allocation methods, Directory Systems: Structured

Organizations, directory and file protection mechanisms.

**Teacher Name: Sona Devi**

**Lesson Plan** 2018-19

 **(Even Semester)**

**Subject-- PROGRAMMING IN VISUAL BASIC(IV)**

**Month of January**

**UNIT – I**

Introduction to VB: Visual & non-visual programming, Procedural, Object-oriented and eventdriven

programming languages, The VB environment: Menu bar, Toolbar, Project explorer,

Toolbox, Properties window, Form designer, Form layout, Immediate window. Visual

Development and Event Driven programming.

**Month of February**

**UNIT – II**

Basics of Programming: Variables: Declaring variables, Types of variables, Converting variables

types, User-defined data types, Forcing variable declaration, Scope & lifetime of variables.

Constants: Named & intrinsic. Operators: Arithmetic, Relational & Logical operators. I/O in VB:

Various controls for I/O in VB, Message box, Input Box, Print statement.

**Month of March**

**UNIT – III**

Programming with VB: Decisions and conditions: If statement, If-then-else, Select-case. Looping

statements: Do-loops, For-next, While-wend, Exit statement. Nested control structures. Arrays:

Declaring and using arrays, one-dimensional and multi-dimensional arrays, Static & dynamic arrays,

Arrays of array. Collections: Adding, Removing, Counting, Returning items in a collection,

Processing a collection.

**Month of April**

**UNIT – IV**

Programming with VB: Procedures: General & event procedures, Subroutines, Functions, Calling

procedures, Arguments- passing mechanisms, Optional arguments, Named arguments, Functions

returning custom data types, Functions returning arrays.

Working with forms: Adding multiple forms in VB, Hiding & showing forms, Load & unload

statements, Activate & deactivate events, Form-load event, menu designing in VB

Simple programs in VB.

Teacher Name:-Sona Devi

**Lesson Plan** 2018-19

 **(Even Semester)**

**Subject – VI RELATIONAL DATABASE MANAGEMENT SYSTEM**

**Month of January**

**UNIT – I**

Relational Model Concepts, Codd's Rules for Relational Model,

Relational Algebra:-Selection and Projection, Set Operation, Renaming, Join and Division.

Relational Calculus: Tuple Relational Calculus and Domain Relational Calculus.

**Month of February**

**UNIT – II**

Functional Dependencies and Normalization:-Purpose, Data Redundancy and Update Anomalies.

Functional Dependencies:-Full Functional Dependencies and Transitive Functional Dependencies,

Characteristics of Functional Dependencies.

Decomposition and Normal Forms (1NF, 2NF, 3NF & BCNF).

**Month of March**

**UNIT – III**

SQL: Data Definition and data types, Specifying Constraints in SQL, Schema, Change statement,

Basic Queries in SQL, Insert, Delete and Update Statements, Views.

**Month of April**

**UNIT – IV**

PL/SQL-Introduction, Advantages of PL/SQL,

The Generic PL/SQL Block: PL/SQL Execution Environment,

PL/SQL Character set and Data Types,

Control Structure in PL/SQL.

Teacher Name:-Sona Devi

**Lesson Plan** 2018-19

 **(Even Semester)**

**Subject-- COMPUTER NETWORKS(VI)**

**Month of January**

**Unit-I**

Introduction to Computer Communications and Networking Technologies; Uses of Computer

Networks; Network Devices, Nodes, and Hosts; Types of Computer Networks and their

Topologies; Network Software: Network Design issues and Protocols; Connection-Oriented and

Connectionless Services; Network Applications and Application Protocols; Computer

Communications and Networking Models: Decentralized and Centralized Systems, Distributed

Systems, Client/Server Model, Peer-to-Peer Model, Web-Based Model, Network Architecture and

the OSI Reference Model; Example Networks: The Internet, X.25, Frame Relay, ATM;

**Month of February**

**UNIT – II**

Analog and Digital Communications Concepts: Representing Data as Analog Signals, Representing

Data as Digital Signals, Data Rate and Bandwidth, Capacity, Baud Rate; Digital Carrier Systems;

Guided and Wireless Transmission Media; Communication Satellites; Switching and Multiplexing;

Dialup Networking; Analog Modem Concepts; DSL Service;

**Month of March**

**UNIT – III**

Data Link Layer: Framing, Flow Control, Error Control; Error Detection and Correction; Sliding

Window Protocols; Media Access Control: Random Access Protocols, Token Passing Protocols;

Token Ring; Introduction to LAN technologies: Ethernet, switched Ethernet, VLAN, fast

Ethernet, gigabit Ethernet, token ring, FDDI, Wireless LANs; Bluetooth;

Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface

Cards and PC Cards, Bridges, Switches, Routers, Gateways;

**Month of April**

**UNIT – IV**

Network Layer and Routing Concepts: Virtual Circuits and Datagrams; Routing Algorithms;

Congestion Control Algorithms; Internetworking;

Network Security Issues: Security threats; Encryption Methods; Authentication; Symmetric –Key Algorithms; Public-Key Algorithms.

Teacher Name :- Sona Devi

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2019-20

**Class:-** B.Sc. (C.Sc.)I Sem.

**Subject:-** **Computer Fundamentals and Programming in ‘C’**

**Month of January:-**

Computer Fundamentals: Definition, Block Diagram along with its components, characteristics & classification of computers.

Computer hardware & software: Definition of software, relationship between hardware and software, types of software.

Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.

Techniques of Problem Solving: Flowcharting, algorithms, pseudo code, decision table, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.

**Month of February:-**

Overview of C: History of C, Importance of C, Structure of a C Program.

Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant.

Input/output: Unformatted & formatted I/O function, Input functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putch(), putchar(), puts().

Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity.

**Month of March:-**

Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement.

Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement.

**Month of April:-**

Functions: Definition, prototype, passing parameters, recursion.

Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime.

Arrays: Definition, types, initialization, processing an array, Strings & arrays.

Teacher Name:- Dr. Navpreet Kaur

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2019-20

**Class:-** B.Sc. (C.Sc.)I Sem.

**Subject:-** Logical Organization of Computer-I

**Month of January:-**

Information Representation: Number Systems, Binary Arithmetic, Fixed-point and Floating-point representation of numbers, BCD Codes, Error detecting and correcting codes, Character Representation – ASCII, EBCDIC, Unicode

**Month of February:-**

Binary Logic: Boolean Algebra, Boolean Theorems, Boolean Functions and Truth Tables, Canonical and Standard forms of Boolean functions, Simplification of Boolean Functions – Venn Diagram, Karnaugh Maps.

**Month of March:-**

Digital Logic: Basic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR, XNOR etc. NAND, NOR, AND-OR-INVERT and OR-AND-INVERT implementations of digital circuits, Combinational Logic – Characteristics, Design Procedures, analysis procedures, Multilevel NAND and NOR circuits.

**Month of April:-**

Combinational Circuits: Half-Adder, Full-Adder, Half-Subtractor, Full-Subtractor, Encoders, Decoders, Multiplexers, Demultiplexers, Comparators, Code Converters, BCD to Seven-Segment Decoder.

Teacher Name:- Sona Devi

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2019-20

**Class:-** B.Sc. (C.Sc.)V Sem.

**Subject:-** Programming in ‘C++’

**Month of January:-**

Introduction to Programming C++: Object-Oriented Features of C++, Class and Objects,

Data Hiding & Encapsulation, Structures, Data members and Member functions, Inline

Functions, Static Data Members and Member Functions, Friend Functions, Preprocessor

Directives, Namespace, Comparing C with C++.

**Month of February:-**

 Constructors & Destructors: Roles and types of Constructors, Roles of Destructors,

Dynamic Memory Allocation: Pointers and their Manipulation, new and delete Operators

‘this’ Pointer.Console I/O: Formatted and Unformatted I/O, Manipulators

**Month of March:-**

Compile-Time Polymorphism: Unary and Binary Operators overloading through Member

Functions and Friend Functions, Function Overloading.

Inheritance: Types of Derivations, Forms of Inheritance, Roles of Constructors and

Destructors in Inheritance.

**Month of April:-**

 Genericity in C++: Template Function, Template Class, Inheritance and Templates.

Exception Handling: try, throw and catch constructs, rethrowing an exception, catch all

Handlers.

Teacher Name:- Dr. Navpreet Kaur

Dept.:- Computer Science

**Office of the Principal CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2019-20

**Class:-** B.Sc. C.Sc.V Sem.

**Subject:-** Introduction to Data Base Systems

**Month of January:-**

Basic Concepts – Data, Information, Records and files. Traditional file –based Systems-File

Based Approach-Limitations of File Based Approach, Database Approach-Characteristics of

Database Approach, Database Management System (DBMS), Components of DBMS

Environment, DBMS Functions and Components, Advantages and Disadvantages of

DBMS. Roles in the Database Environment - Data and Database Administrator, Database

Designers, Applications Developers and Users.

**Month of February:-**

Database System Architecture – Three Levels of Architecture, External, Conceptual and Internal Levels, Schemas, Mappings and Instances.Data Independence – Logical and Physical Data Independence. nClassification of Database Management System, Centralized and Client Server architecture to DBMS.Data Models: Records- based Data Models, Object-based Data Models, Physical Data Models and Conceptual Modeling.

**Month of March:-**

Entity-Relationship Model – Entity Types, Entity Sets, Attributes Relationship Types Relationship Instances and ER Diagrams.Basic Concepts of Hierarchical and Network Data Model

**Month of April:-**

Relational Data Model:-Brief History, Relational Model Terminology-Relational Data

Structure, Database Relations, Properties of Relations, Keys, Domains, Integrity Constraints

over Relations, Base Tables and Views.

Teacher Name:- Sona Devi

Dept.:- Computer Science

**Lesson Plan** 2019-20

 **(Even Semester)**

**Subject – VI RELATIONAL DATABASE MANAGEMENT SYSTEM**

**Month of January**

**UNIT – I**

Relational Model Concepts, Codd's Rules for Relational Model,

Relational Algebra:-Selection and Projection, Set Operation, Renaming, Join and Division.

Relational Calculus: Tuple Relational Calculus and Domain Relational Calculus.

**Month of February**

**UNIT – II**

Functional Dependencies and Normalization:-Purpose, Data Redundancy and Update Anomalies.

Functional Dependencies:-Full Functional Dependencies and Transitive Functional Dependencies,

Characteristics of Functional Dependencies.

Decomposition and Normal Forms (1NF, 2NF, 3NF & BCNF).

**Month of March**

**UNIT – III**

SQL: Data Definition and data types, Specifying Constraints in SQL, Schema, Change statement,

Basic Queries in SQL, Insert, Delete and Update Statements, Views.

**Month of April**

**UNIT – IV**

PL/SQL-Introduction, Advantages of PL/SQL,

The Generic PL/SQL Block: PL/SQL Execution Environment,

PL/SQL Character set and Data Types,

Control Structure in PL/SQL.

Teacher Name:-Sona Devi

**Lesson Plan** 2019-20

 **(Even Semester)**

**Subject-- COMPUTER NETWORKS(VI)**

**Month of January**

**Unit-I**

Introduction to Computer Communications and Networking Technologies; Uses of Computer

Networks; Network Devices, Nodes, and Hosts; Types of Computer Networks and their

Topologies; Network Software: Network Design issues and Protocols; Connection-Oriented and

Connectionless Services; Network Applications and Application Protocols; Computer

Communications and Networking Models: Decentralized and Centralized Systems, Distributed

Systems, Client/Server Model, Peer-to-Peer Model, Web-Based Model, Network Architecture and

the OSI Reference Model; Example Networks: The Internet, X.25, Frame Relay, ATM;

**Month of February**

**UNIT – II**

Analog and Digital Communications Concepts: Representing Data as Analog Signals, Representing

Data as Digital Signals, Data Rate and Bandwidth, Capacity, Baud Rate; Digital Carrier Systems;

Guided and Wireless Transmission Media; Communication Satellites; Switching and Multiplexing;

Dialup Networking; Analog Modem Concepts; DSL Service;

**Month of March**

**UNIT – III**

Data Link Layer: Framing, Flow Control, Error Control; Error Detection and Correction; Sliding

Window Protocols; Media Access Control: Random Access Protocols, Token Passing Protocols;

Token Ring; Introduction to LAN technologies: Ethernet, switched Ethernet, VLAN, fast

Ethernet, gigabit Ethernet, token ring, FDDI, Wireless LANs; Bluetooth;

Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface

Cards and PC Cards, Bridges, Switches, Routers, Gateways;

**Month of April**

**UNIT – IV**

Network Layer and Routing Concepts: Virtual Circuits and Datagrams; Routing Algorithms;

Congestion Control Algorithms; Internetworking;

Network Security Issues: Security threats; Encryption Methods; Authentication; Symmetric –Key Algorithms; Public-Key Algorithms.

Teacher Name :- Sona Devi

**Lesson Plan** 2019-20

 **(Even Semester)**

**Subject—PC Software(II)**

**Month of January**

**Unit-I**

MS-Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel – display properties, adding and removing software and hardware, setting date and time, screensaver and appearance. Using windows accessories.

**Month of February**

**UNIT – II**

## Documentation Using MS-Word - Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Advance Features of MS-Word-Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object, Template.

**Month of March**

**UNIT – III**

Electronic Spread Sheet using MS-Excel - Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Advance features of MS-Excel-Pivot table & Pivot Chart, Linking and Consolidation, Database Management using Excel-Sorting, Filtering, Table, Validation, Goal Seek, Scenario.

**Month of April**

**UNIT – IV**

## Presentation using MS-PowerPoint: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.

Teacher Name: Dr. Navpreet Kaur

**Lesson Plan** 2019-20

 **(Even Semester)**

**Logical Organization of Computer-II (II)**

**Month of January**

# Unit I

Sequential Logic: Characteristics, Flip-Flops, Clocked RS, D type, JK, T type and Master-Slave flip-flops. State table, state diagram and state equations. Flip-flop excitation tables

**Month of February**

# Unit II

Sequential Circuits: Designing registers – Serial Input Serial Output (SISO), Serial Input Parallel Output (SIPO), Parallel Input Serial Output (PISO), Parallel Input Parallel Output (PIPO) and shift registers. Designing counters – Asynchronous and Synchronous Binary Counters, Modulo-N Counters and Up-Down Counters

**Month of March**

# Unit III

Memory & I/O Devices: Memory Parameters, Semiconductor RAM, ROM, Magnetic and Optical Storage devices, Flash memory, I/O Devices and their controllers.

**Month of April**

# Unit IV

Instruction Design & I/O Organization: Machine instruction, Instruction set selection, Instruction cycle, Instruction Format and Addressing Modes. I/O Interface, Interrupt structure, Program-controlled, Interrupt-controlled & DMA transfer, I/O Channels, IOP.

Teacher Name: Sona Devi

**Lesson Plan** 2019-20

 **(Even Semester)**

**Subject – OPERATING SYSTEMS**

**Month of January**

**UNIT – I**

Introductory Concepts: Operating system functions and characteristics, historical evolution of

operating systems, Real time systems, Distributed systems, Methodologies for implementation of

O/S service system calls, system programs.

**Month of February**

**UNIT – II**

Process management: Process concepts, Process states and Process Control Block.

CPU Scheduling: Scheduling criteria, Levels of Scheduling, Scheduling algorithms, Multiple

processor scheduling.

Deadlocks: Deadlock characterization, Deadlock prevention and avoidance, Deadlock detection

and recovery, practical considerations.

**Month of March**

**UNIT – III**

Concurrent Processes: Critical section problem, Semaphores, Classical process co-ordination

problems and their solutions, Inter-process Communications.

Storage Management: memory management of single-user and multiuser operating system,

partitioning, swapping, paging and segmentation, virtual memory, Page replacement Algorithms,

Thrashing.

**Month of April**

**UNIT – IV**

Device and file management: Disk scheduling, Disk structure, Disk management, File Systems:

Functions of the system, File access and allocation methods, Directory Systems: Structured

Organizations, directory and file protection mechanisms.

**Teacher Name:-Sona Devi**

**Lesson Plan** 2019-20

 **(Even Semester)**

**Subject-- PROGRAMMING IN VISUAL BASIC**

**Month of January**

**UNIT – I**

Introduction to VB: Visual & non-visual programming, Procedural, Object-oriented and eventdriven

programming languages, The VB environment: Menu bar, Toolbar, Project explorer,

Toolbox, Properties window, Form designer, Form layout, Immediate window. Visual

Development and Event Driven programming.

**Month of February**

**UNIT – II**

Basics of Programming: Variables: Declaring variables, Types of variables, Converting variables

types, User-defined data types, Forcing variable declaration, Scope & lifetime of variables.

Constants: Named & intrinsic. Operators: Arithmetic, Relational & Logical operators. I/O in VB:

Various controls for I/O in VB, Message box, Input Box, Print statement.

**Month of March**

**UNIT – III**

Programming with VB: Decisions and conditions: If statement, If-then-else, Select-case. Looping

statements: Do-loops, For-next, While-wend, Exit statement. Nested control structures. Arrays:

Declaring and using arrays, one-dimensional and multi-dimensional arrays, Static & dynamic arrays,

Arrays of array. Collections: Adding, Removing, Counting, Returning items in a collection,

Processing a collection.

**Month of April**

**UNIT – IV**

Programming with VB: Procedures: General & event procedures, Subroutines, Functions, Calling

procedures, Arguments- passing mechanisms, Optional arguments, Named arguments, Functions

returning custom data types, Functions returning arrays.

Working with forms: Adding multiple forms in VB, Hiding & showing forms, Load & unload

statements, Activate & deactivate events, Form-load event, menu designing in VB

Simple programs in VB.

Teacher Name:-Sona Devi

**Lesson Plan** 2019-20

 **(Even Semester)**

**Subject-- COMPUTER NETWORKS**

**Month of January**

**Unit-I**

Introduction to Computer Communications and Networking Technologies; Uses of Computer

Networks; Network Devices, Nodes, and Hosts; Types of Computer Networks and their

Topologies; Network Software: Network Design issues and Protocols; Connection-Oriented and

Connectionless Services; Network Applications and Application Protocols; Computer

Communications and Networking Models: Decentralized and Centralized Systems, Distributed

Systems, Client/Server Model, Peer-to-Peer Model, Web-Based Model, Network Architecture and

the OSI Reference Model; Example Networks: The Internet, X.25, Frame Relay, ATM;

**Month of February**

**UNIT – II**

Analog and Digital Communications Concepts: Representing Data as Analog Signals, Representing

Data as Digital Signals, Data Rate and Bandwidth, Capacity, Baud Rate; Digital Carrier Systems;

Guided and Wireless Transmission Media; Communication Satellites; Switching and Multiplexing;

Dialup Networking; Analog Modem Concepts; DSL Service;

**Month of March**

**UNIT – III**

Data Link Layer: Framing, Flow Control, Error Control; Error Detection and Correction; Sliding

Window Protocols; Media Access Control: Random Access Protocols, Token Passing Protocols;

Token Ring; Introduction to LAN technologies: Ethernet, switched Ethernet, VLAN, fast

Ethernet, gigabit Ethernet, token ring, FDDI, Wireless LANs; Bluetooth;

Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface

Cards and PC Cards, Bridges, Switches, Routers, Gateways;

**Month of April**

**UNIT – IV**

Network Layer and Routing Concepts: Virtual Circuits and Datagrams; Routing Algorithms;

Congestion Control Algorithms; Internetworking;

Network Security Issues: Security threats; Encryption Methods; Authentication; Symmetric –Key

Algorithms; Public-Key Algorithms.

Teacher Name:-Sona Devi

**Lesson Plan** 2019-20

**Even Semester)**

**Subject – V RELATIONAL DATABASE MANAGEMENT SYSTEM**

**Month of January**

**UNIT – I**

Relational Model Concepts, Codd's Rules for Relational Model,

Relational Algebra:-Selection and Projection, Set Operation, Renaming, Join and Division.

Relational Calculus: Tuple Relational Calculus and Domain Relational Calculus.

**Month of February**

**UNIT – II**

Functional Dependencies and Normalization:-Purpose, Data Redundancy and Update Anomalies.

Functional Dependencies:-Full Functional Dependencies and Transitive Functional Dependencies,

Characteristics of Functional Dependencies.

Decomposition and Normal Forms (1NF, 2NF, 3NF & BCNF).

**Month of March**

**UNIT – III**

SQL: Data Definition and data types, Specifying Constraints in SQL, Schema, Change statement,

Basic Queries in SQL, Insert, Delete and Update Statements, Views.

**Month of April**

**UNIT – IV**

PL/SQL-Introduction, Advantages of PL/SQL,

The Generic PL/SQL Block: PL/SQL Execution Environment,

PL/SQL Character set and Data Types,

Control Structure in PL/SQL.

Teacher Name:-Sona Devi

**CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2020-21

**Class:-** B.Sc. (C.Sc.)III Sem.

**Subject:-** STRUCTURED SYSTEM ANALYSIS AND DESIGN

**Month of August:-**

System Concept: Definition, Characteristics, Elements of system, Physical and abstract system, open and closed system, man-made information systems. System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success. Role of system analyst.

**Month of September:-**

System Planning: Bases for planning in system analysis: Dimensions of Planning. Initial Investigation: Determining user’s requirements and analysis, fact finding process and techniques. Tools of structured Analysis: Data Flow diagram, data dictionary, IPO and HIPO charts, Gantt charts, pseudo codes, Flow charts, decision tree, decision tables.

**Month of October:-**

 Feasibility study: Technical, Operational & Economic Feasibilities. Cost/Benefit Analysis: Data analysis cost and benefit analysis of a system. Input/ Output and Form Design.

**Month of November**

File Organization and database design: Introduction to files and database, File structures and organization, objectives of database design, logical and physical view of data. System testing: Introduction, objectives of testing, test planning, testing techniques.

**Month of December:-**

Quality assurance: Goal of quality assurance, levels of quality assurance System implementation and software maintenance: primary activities in maintenance, reducing maintenance costs.

**Month of January:-**

Revision of whole syllabus.

Teacher Name:- Dr. Navpreet Kaur

Deptt.:- Computer Science

**CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2020-21

**Class:-** B.Sc. (C.Sc.)III Sem.

**Subject:-** **PAPER – I DATA STRUCTURES USING ‘C’**

**Month of August:-** The concept of data structure, Abstract data type, data structure operations, algorithms complexity, time-space tradeoff.

**Month of September:-** Introduction to strings, storing strings, string operations, pattern matching algorithms. Linked list: Introduction and basic operations, Header nodes, Doubly Linked List, Circular Linked List, Applications of Linked List.

**Month of October:-**Stack: primitive operation on stack, Representation of Stack as Linked List and array, Stacks applications. Introduction to queues, Primitive Operations on the Queues, Circular queue, Priority queue, Representation of Queues as Linked List and array, Applications of queue.

**Month of November:-**Trees - Basic Terminology, Binary Trees, Tree Representations using Array & Linked List, Basic operation on Binary tree, Traversal of binary trees:- In order, Preorder & post order, Applications of Binary tree.

**Month of December:-**Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs. Searching: linear search, Binary search, Sorting: Insertion sort, Selection sort, Quick sort, Bubble sort.

**Month of January:-**

 Revision of whole syllabus.

Teacher Name:- Sona Devi

Deptt.:- Computer Science

**CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2020-21

**Class:-** B.Sc. (C.Sc.)I Sem.

**Subject:-** **Computer Fundamentals and Programming in ‘C’**

**Month of November:-** Computer Fundamentals: Definition, Block Diagram along with its components, characteristics & classification of computers.Computer hardware & software: Definition of software, relationship between hardware and software, types of software.

**Month of December:-** Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.

Techniques of Problem Solving: Flowcharting, algorithms, pseudo code, decision table, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.

**Month of January:-**Overview of C: History of C, Importance of C, Structure of a C Program. Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant.Input/output: Unformatted & formatted I/O function, Input functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putch(), putchar(), puts(). Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators.

**Month of February:-** Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity.

Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement.

Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement.

**Month of March:-**

Functions: Definition, prototype, passing parameters, recursion.

Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime. Arrays: Definition, types, initialization, processing an array, Strings & arrays

Teacher Name:- Dr. Navpreet Kaur

Dept.:- Computer Science

**CMG, G.C.W Bhodia Khera (Fatehabad)**

**Lesson Plan**

**Session :-** 2020-21

**Class:-** B.Sc. (C.Sc.)I Sem.

**Subject:-** Logical Organization of Computer-I

**Month of November:-**

Information Representation: Number Systems, Binary Arithmetic, Fixed-point and Floating-point representation of numbers, BCD Codes, Error detecting and correcting codes, Character Representation – ASCII, EBCDIC, Unicode

**Month of December:-**

Binary Logic: Boolean Algebra, Boolean Theorems, Boolean Functions and Truth Tables, Canonical and Standard forms of Boolean functions, Simplification of Boolean Functions – Venn Diagram, Karnaugh Maps.

**Month of January:-**

Digital Logic: Basic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR, XNOR etc. NAND, NOR, AND-OR-INVERT and OR-AND-INVERT implementations of digital circuits, Combinational Logic – Characteristics, Design Procedures, analysis procedures, Multilevel NAND and NOR circuits.

**Month of February:-**

Combinational Circuits: Half-Adder, Full-Adder, Half-Subtractor, Full-Subtractor, Encoders, Decoders, Multiplexers, Demultiplexers, Comparators, Code Converters, BCD to Seven-Segment Decoder.

Month of March:- Revision of whole syllabus.

Teacher Name:- Sona Devi

Dept.:- Computer Science