**Lesson Plan Jan 2024 to April 2024**

**Name of Assistant/Associate Professor:** Vijay Singh

Class and Section: B.Com. 2nd Sem.

**Subject**: Basics of Computer-11 Paper: 2.06

**Week 1:** Fundamental of computers: Model of a digital computer; Functioning of a digital computer, Types of Digital Computer.

**Week 2:** Advantages of computers, Difference between digital computer and analog computer.

**Week 3:** Applications of computers: Computers in Commerce, Marketing.

**Week 4**: Application in Education and Management, Software concepts: Types of Software and their role.

**Week 5:** Different System Software types-Operating systems, Translators, System Utilities

**Week 6:** Concept of Application Packages; Types of an Operating system-Multi-user O.S.

**Week 7:** Multi-tasking O.S., Multi-Processing O.S; Time–sharing O.S. Multi-Programming O.S, Operating System as a resource Manager.

**Week 8:** Holi Holidays

**Week 9:** Concept of GUI and CUI, : Windows: Components of a Application Window, Types of Windows.

**Week 10:** Windows as an Operating System, Windows explorer, Using Paintbrush, Control Panel, **Week 11:** Installing a printer, User interfaces-CUI and GUI, Concept of a Desktop and Taskbar

**Week 12:**My Computer, Recycle Bin, My Documents and Internet Explorer icons.

**Week 13:** MS-Excel: Applications of a Spread sheet; Advantages of a Spread sheet; Features of Excel. **Week 14:** Rows,Columns,Cell,Menus,Creatingworksheet, Formatting, Printing.

**Week 15:** Establishing work sheet links, Table creating and printing graphs.

**Week 16:** Macros,Using Built–in-functions.

**Week 17 :** Revision.

LESSON PLAN

Name of Teacher – Vijay Singh

Subject: - Computer Science Paper – Programming in C, Structured Systems Analysis and Design Class –BSc. Comp sci. 2nd sem Session:- 2023-2024 (Even Sem.)

Month & Week Contents

Week 1 Basic concepts of programming, techniques of problem solving, algorithm designing and flowcharting, concept of structured programming-Top-Down design

Week 2 Development of efficient program; Program correctness; Debugging and testing of programs, Algorithm for searching, sorting(Insertion, Exchange), Merging of Order-List.

Week 3 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: declaration and definition.

Week 4 Operators: Arithmetic, relational, logical, bitwise, unary, assignment and conditional operators and their hierarchy & associativity, input/output statements

Week 5 Arithmetic Expression, Evaluation of Arithmetic Expression, Type- casting and Conversion. Week 6 Decision making & branching: Decision making with if statement, if- else statement, nested if, else-if ladder, switch statement, goto statement. Decision making & looping: for, while, and do-while loop; Jumps in loop, break, continue.

Week 7 Functions: Definition, prototype, passing parameters, Recursion. Pointers: Declaration, operations on pointers. File Handling: Standard I/O text File, Writing to File, Reading a File.

Week 8 Holi Holidays

Week 9 array of pointers, pointers to arrays. Data Structures: Arrays: One Dimensional, Multidimensional, Pointers and arrays. Strings: String Constants, Input & Output, String Functions. Structure & Unions.

Week 10 Introduction to system, Definition and characteristics of a system, Elements of system, Types of system, System development life cycle, Role of system analyst

Week 11 Analyst/user interface, System planning and initial investigation: Introduction, Bases for planning in system analysis, Sources of project requests, Initial investigation, Fact finding, Information gathering, information gathering tools.

Week 12 Structured analysis, Tools of structured analysis: DFD, Data dictionary, Flow charts, Gantt charts, decision tree, decision table, structured English, Pros and cons of each tool,

Week 13 Feasibility study: Introduction, Objective, Types, Steps in feasibility analysis, Feasibility report, Oral presentation, Cost and benefit analysis: Identification of costs and benefits, classification of costs and benefits, Methods of determining costs and benefits, Interpret results of analysis and take final action.

Week 14 System Design: System design objective, Logical and physical design, Design Methodologies, structured design, Form-Driven methodology(IPO charts), structured walkthrough

Week 15 , Input/Output and form design: Input design, Objectives of input design, Output design, Objectives of output design, Form design, Classification of forms, requirements of form design, Types of forms, Layout considerations, Form control.

Week 16 System testing: Introduction, Objectives of testing, Test plan, testing techniques/Types of system tests, Quality assurance goals in system life cycle, System implementation, Process of implementation, System evaluation, System maintenance and its types, System documentation, Week 17 Revision

Lesson Plan

JAN 2024 to April 2024

Name of Assistant/Associate Professor:Vijay Singh

Class : B.Sc. Computer Science 4th sem

Subject: Data Structures with C/C++, Operating System Paper: 4.1, 4.2

Week 1: Data-Structure operations, Algorithm, Complexity, Data structure and its essence, Introduction to Arrays, Introductory Concepts: Operating system functions and characteristics.

Week 2: Array operations, Multi- dimensional arrays, sequential allocation, address calculations, historical evolution of operating Systems.

Week 3: Sparse arrays, Stacks-Introduction to Stacks, primitive operations on stacks.

Week 4: Representation of stacks as an array and stack-applications. Types of Operating System: Real time, Multiprogramming, Multiprocessing, Batch processing,

Week 5: Queues:-Introduction to queues, operations on queue, Methodologies for implementation of O/S service system calls, system programs.

Week 6: Circular queue, priority queue, Applications of queue. Process management: Process concepts, operations on processes, Process states and Process Control Block.

Week 7: Linked List-introduction and basic operations, Header nodes, doubly linked list, circular linked list. CPU Scheduling: Scheduling criteria, Levels of Scheduling.

Week 8: Holi Holidays.

Week 9: Representation of linked list as an array, stacks and queues. Tree structures: Basic terminology. Scheduling algorithms, multiple processor scheduling.

Week 10: binary trees and binary search trees, implementing binary trees, Deadlocks: Deadlock characterization, Deadlock prevention and avoidance.

Week 11: Tree traversal algorithms, threaded trees, Concurrent Processes: Critical section problem, Semaphores, Classical process co-ordination problems and their solutions.

Week 12: Trees in search algorithms, AVL Trees, Inter-process Communications. Storage Management: memory management of single-user and multi-user operating system.

Week 13: Polish notation and expression trees, applications of binary trees. Graph data structure and their applications. Graph traversals, shortest paths, partitioning, swapping, paging and segmentation, Thrashing.

Week 14: Spanning trees and related algorithm, Sorting- Internal and external sorting. File management: File Systems: Functions of the system, File access methods,

Week 16: Various sorting algorithms, Time and Space Complexity, allocation methods: Contiguous, allocation, linked, indexed allocation, Directory Systems: Structured Organizations, Directory.

Week 17: Time and Space complexity of algorithms, Searching techniques, Applications of Sorting and Searching in computer science, file protection mechanisms