**Government College for Women, Bawani Khera (Bhiwani)**

**Department of Computer Science**

Academic year: 2023-24

Paper Title: **Operating System**

Marks allotted: 50

Internal assessment: 10

External examination: 40

**Objectives of Teaching the Paper:**

In this course, the learners will be able to develop expertise related to the following:-

1. Understand the basic components of Operating Systems and their interactions.

2. Select the policies for Process Management, Memory Management and Deadlock Management.

3. Understand the basics of File, Device and Disk Storage Management.

**Mode of Transaction for the Paper:**

• Discussions

• Lectures and class assignments

• YouTube Lectures and Presentations

**Course Outcomes:**

After completion of this course, the learners will be able to:-

1. Explain the structure and functions of operating systems along with their components, types and working.
2. Make use of appropriate Linux commands for memory management, file management and directory management.
3. Analyze the performance of different scheduling algorithms along with the policies for concurrency and deadlock management.
4. Elaborate the system calls for process management and file management.

**Suggested Readings:**

TEXT BOOKS:

1. Silberschatz, Galvin, Greg, “Operating System Concepts”, Wiley and Sons, 9th Edition, 2015.
2. Sumitabha Das, “Unix concept and Programming”, McGraw Hill education, 4th Edition, 2015.
3. W. Richard Stevens Stephen A. Rago” Advanced Programming in the UNIX® Environment”, AddisonWesley, 3rd Edition, 2013.
4. Milan Milenkovic, “Operating Systems Concepts and Design”, Tata McGraw-Hill, 2nd Edition, 1995 **.**

REFERENCE BOOKS:

1. Godbole, Achyut, “Operating System”, McGraw-Hill Education, 2nd Edition, 2005.
2. William Stallings, “Operating System: Internals and Design Principles”, Person, 9th Edition, 2018.
3. A. S. Tanenbaum, “Modern Operating Systems “, Pearson, 3rd Edition, 2007.
4. Kenneth H. Rosenet al, “UNIX: The Complete Reference”, McGraw-Hill/Osborne, 6th Edition, 2017

**Teaching Plan for the Academic Session 2023-24**

**Teacher: Meenu ,Class: B.Sc., Semester: 4th**

***Mob. 9468120002, Email: menu.dhull20@gmail.com***

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| **Week** | **Concept Breakdown** |
| **Week 1**  **01.02.2024**  **to**  **03.02.2024** | Unit-1   * System Software * Resource abstraction, OS Strategies * Single-Processor Systems, Multiprocessor Systems * Types of Operating Systems |
| **Week 2**  **05.02.2024**  **To**  **10.02.2024** | Unit-1   * Types of Operating Systems: * Batch Operating System, Multi-Programmed Operating System, Time-Shared Operating System, Real Time Operating System, Distributed Operating Systems. |
| **Week 3**  **12.02.2024**  **to**  **17.02.2024** | Unit-2   * Factors in OS Design * Basic OS Functions * Test of Unit -1 * Assignment-1 |
| **Week 4**  **19.02.2024**  **to**  **24.02.2024** | Unit-2   * Implimentation of Process * Process models. * Test of Unit-1 |
| **Week 5**  **26.02.2024**  **to**  **02.03.2024** | Unit-2   * System Services: System call * System Programs * System View of the process & Resources |
| **Week 6**  **04.03.2024**  **To**  **09.03.2024** | Unit-2   * Initiating the OS * Process Models * Process Concept * Operation on Processes, Cooperating Processes, * Inter-Process Communication |
| **Week 7**  **11.03.2024**  **to**  **16.03.2024** | Unit-3   * Basic Concepts * Scheduling Criteria, * Scheduling algorithms * Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling. * Test of Unit 2 |
| **Week 8**  **18.03.2024**  **to**  **22.03.2024** | Unit-3   * Concepts, Access Methods * Directory and Disk Structure. File-System Structure, * File-System Implementation * Directory Implementation, * Allocation Methods, * Free-Space Management. |
| **Week 9**  **01.04.2024**  **To**  **06.04.2024** | Unit-3   * Main Memory: Contiguous Memory Allocation * Fragmentation * Paging, And Segmentation. * Assignment-2 |
| **Week 10**  **08.04.2024**  **to**  **13.04.2024** | Unit-3   * Virtual Memory: Demand Paging * Page Replacement * Page replacement algorithm * Allocation of frames, * Thrashing |
| **Week 11**  **15.04.2024**  **to**  **20.04.2024** | Unit-4   * Shell Introduction * Types of Shell * Editors in shell * Shell Scripting * Test of unit-3 |
| **Week 12**  **22.04.2024**  **to**  **27.04.2024** | Unit-4   * Shell Variables * System Calls * Pipes & Filters * Decision Making & loops * Pattern Matching |
| **Week 13**  **29.04.2024**  **to**  **30.04.2024** | * Test of unit-4 * Revision |

**Name: Meenu Signature**

**Assistant professor**

**Computer Science**

**Government College for Women, Bawani Khera (Bhiwani)**

**Department of Computer Science**

Academic year: 2023-24

Paper Title: **Problem solving using Computer**

Marks allotted: 50

Internal assessment: 10

External examination: 40

**Objectives of Teaching the Paper:**

1. To make the student learn a programming language.

2. To learn problem solving techniques.

3. To teach the student to write programs in C and to solve the problems.

**Mode of Transaction for the Paper:**

• Discussions

• Lectures and class assignments

• YouTube Lectures and Presentations

**Course Outcomes:**

After Completion of this course the student would be able to

• Read, understand and trace the execution of programs written in C language.

• Write the C code for a given algorithm.

• Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.

• Write programs that perform operations using derived data types.

**Suggested Readings:**

**TEXT BOOKS:**

1. E. Balagurusamy Programming in ANSI C, 5th Edition, Tata McGraw-Hill Publications

2. P B Kottur Computer Concepts and C Programming

**REFERENCE BOOKS:**

1. Kerningham Dennis Ritchie The C programming language (ANSI C version), 2 nd Edition, PHI India 2. Jeri R Hanly Elliot B Koffman Problem solving and program design in C Person Addison Wesley 2006.

3. Yashwant Kanetkar Let us C, 6th Edition , BPB publication

**Teaching Plan for the Academic Session 2023-24**

**Teacher: Meenu , Class: B.Sc., Semester: 2nd**

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| **Week** | **Concept Breakdown** |
| **Week 1**  **01.02.2024**  **to**  **03.02.2024** | Unit-1   * Introduction of Computers * Characteristics of computers * Uses of Computers |
| **Week 2**  **05.02.2024**  **To**  **10.02.2024** | Unit-1   * Types of Computers * Generations of Computers * Block Diagram of Computers * Input/output Device |
| **Week 3**  **12.02.2024**  **to**  **17.02.2024** | Unit-1   * Concept Of Problem solving * Problem Definition, Program Design * Debugging * Types of errors in Programming, Documentation. * Test -I |
| **Week 4**  **19.02.2024**  **to**  **24.02.2024** | Unit-2   * Flowcharting, * Decision Table * Algorithms, Structured programming concepts * Programming Methodologies viz top down and bottom up approach |
| **Week 5**  **26.02.2024**  **to**  **02.03.2024** | Unit-2   * Programming using logic ‘C’ * C fundamentals * Introduction to C, C character Set * Data types, Constants, Variables, Identifiers and keywords * Literals, Strings. * Assignment-I |
| **Week 6**  **04.03.2024**  **To**  **09.03.2024** | Unit-2     * Different types of Operators used in C( Arithmetic, Relational, Logical or Boolean, assignment Operator, Ternary Operator, Bitwise Operator, Increment or decrement Operator). |
| **Week 7**  **11.03.2024**  **to**  **16.03.2024** | Unit-3   * Input Output Functions * % Format Specifiers, * Control Statement: Control Loops, |
| **Week 8**  **18.03.2024**  **to**  **22.03.2024** | Unit-3   * Conditional Execution . * Nesting Of loops * Conditional statements |
| **Week 9**  **01.04.2024**  **To**  **06.04.2024** | Unit-3   * Function Definition * Accesing and Passing arguments to a function * function Prototypes * Recursion. * Test –II |
| **Week 10**  **08.04.2024**  **to**  **13.04.2024** | Unit-4   * Arrays and Strings :Single& Multidimentional Arrays * Introduction to Strings * String processing. * Assignment –II |
| **Week 11**  **15.04.2024**  **to**  **20.04.2024** | Unit-4   * Pointer ,Structure and Union: Understanding Pointers, Pointers and Arrays * Pointer to Function, |
| **Week 12**  **22.04.2024**  **to**  **27.04.2024** | Unit-4   * Defining and processing Structures ,Pointer and * Structure, Concept Of Union |
| **Week 13**  **29.04.2024**  **to**  **30.04.2024** | * Revision of all Four Units. |

**Name: Meenu Signature**

**Assistant professor**

**Computer Science**