CLUSTER UNIVERSITY SRINAGAR
(SYLLABUS)

Course Code	*BCA-CR4102*
Course Title	*Operating System*
Semester	*BCA 4th Semester*
Course Type & Credits	*Core Paper - 04 credits (L) + 02 credits (P) = 06 credits*

UNIT I (INTRODUCTION AND PROCESS MANGEMENT)

Introduction to Operating System, Types of Operating Systems, OS Structure: Overview of Monolithic, Microkernel Operating Systems, Process Management : Concept, Scheduling criteria , Process Scheduling & Algorithms, Inter process communication & Synchronization: Race Condition, Critical Section, Mutual Exclusion, Monitor, Semaphores, IPC Problems, Synchronization and Deadlocks.

UNIT II (MEMORY MANAGEMENT)

Introduction to Memory Management, Logical and Physical Address Map, Memory Allocation & Associated Techniques, Fragmentation & Compaction, Virtual Memory: Hardware & Control Structures, Paging and Page Replacement Algorithms, Locality of Reference, Page Faults.

UNIT III (I/O AND FILE MANAGEMENT)

I/O Devices, Direct Memory Access, Software & Hardware Interrupts, Interrupt Handling, Disk Structure, Disk Scheduling Algorithms. File Concept, Access Methods, File Operations, Directory Structure, Free Space Management (Bit Vector, Linked List)

UNIT IV (SHELL SCRIPTING USING LINUX)

Introduction to Linux, Shell Basics, Shell Functionality & Types, Environment, Vi Text Editor Basics, Linux Command Structure, Linux Commands: Internal & External Commands, Writing & Executing basic shell script, Debugging Script, Making Interactive Scripts, Variables, Mathematical Expressions, Loops & Conditions, Commands Line Arguments, Functions & File Manipulations, Regular Expression & Filters: Grep, Cut, Sort Commands.

Recommended Readings:

1. Operating Systems Concepts, Abraham Silberschatz, P B Galvin
2. Modern Operating Systems, Andrew S. Tanenbaum.
3. Operating Systems: Internals & Design Principals, William Stallings
4. Mastering Linux Shell Scripting, Andrew Mallett.
5. Linux Kernel Development, Robert Love.

L = Lecture, P = Practical, T = Tutorial