ST. ALOYSIUS COLLEGE(AUTONOMOUS), JABALPUR

Reaccredited 'A+ 'Grade by NAAC(CGPA:3.68/4.00)
College with Potential for Excellence by UGC
DST-FIST Supported & STAR College Scheme by DBT

Faculty of Science

Bachelor of Computer Application
BCA II Semester
Paper-Minor
Operating System
Course Outcomes

CO. No.	Course Outcomes	Cognitive Level
CO 1	Describe the importance of computer system resources and the role of operating system in their management policies and algorithms.	U
CO 2	Specify objective of modern operating system and describe how operating systems and describe how operating systems have evolved over time.	Apply
CO 3	Understand various process management concepts and can compare various scheduling techniques, synchronization, ad deadlocks.	Apply, Analyze
CO 4	Describe the concepts of multithreading and memory management techniques.	Create, Apply
CO 5	Describe various file operations, file allocation methods and disk space management.	Apply
CO 6	To understand and identify potential threats to operating systems and the security features design to guard against them.	Apply, Analyze
CO 7	Learn to operate the Linux system.	Apply

Credit and Marking Scheme

	Credits	Marks		Total Marks
		Internal	External	
Theory	3	40	60	**100**
Practical	1	40	60	**100**
Total	**4**	**200**		

Evaluation Scheme

	Marks	
	Internal	**External**
Theory	3 Internal Exams of 20 Marks (During the Semester) (Best 2 will be taken)	1 External Exams (At the End of Semester)
Practical	3 Internal Exams (During the Semester) (Best 2 will be taken)	1 External Exams (At the End of Semester)

MD

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BCA II Semester **Paper-Minor**

Operating System
Theory

No. of Lectures (in hours per week): 2 Hrs. per week

Total No. of Lectures: 60 Hrs. **Maximum Marks:** 60

Units	Topics	No. of Lectures
I	**Introduction to Operating System**: What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems- Multiprogramming Systems, Time Sharing system, Distributed Operating System, Real time system, Operating System for Personal Computers, Workstation and Hand-held Devices, Application of various Operating System in real life. Some prevalent operating system Windows, UNIX/Linux, Android, MacOS, Blackberry OS, Symbian, Bada etc.	12
II	**Process Management**: Process Concepts, Process state & Process Control Block. **Process Scheduling**: Scheduling Criteria, Scheduling Algorithms (Preemptive & Non-Preemptive) – FCFS, SJF, SRTN, RR, Priority, Multiple-Processor, Real –Time, Multilevel Queue and Multilevel Feedback Queue Scheduling. **Deadlock** – Definition Characterization, Necessary and Sufficient Conditions for Deadlock. **Deadlock Handling Approaches**: Prevention, Avoidance, Detection and Recovery.	12
III	**Memory Management**: Introduction, Address Binding, Logical versus Physical Address Space, Swapping, Contiguous & Non-Contiguous Allocation, Fragmentation (Internal & External), Compaction, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement Algorithms. **File Management**: Concept of File System (File Attributions, Operations, Types), Functions of File System, Types of File System, Access Methods (Sequential, Direct & other methods), Directory Structure (Single-Level, Two-Level, Tree-Structured, Acyclic-Graph, General Graph). Allocation Methods (Contiguous, Linked, Indexed)	12
IV	**Disk Management**: Structure, Disk Scheduling Algorithms (FCFS, SSTF, SCAN, C-SCAN, LOOK), Swap Space Management, Disk Reliability, Recovery. **Security**: Security Threats, Security policy mechanism, Protection, Trusted Systems, Authentication and Internal Access Authorization, Windows Security.	12
V	LINUX: Introduction, History and features of Linux, advantages, hardware requirements for installation, Linux architecture, file system of Linux – boot block, super block, inode table, data blocks. Linux standard directories, Linux kernel, partitioning the hard drive for Linux, installing the Linux system, system – startup and shut-down process, init and run levels. Process, Swap, Paritition, fdisk, checking disk free spaces. Difference between CLI OS & GUI OS, Window v/s Linux, Importance of Linux Kernel, Files and Directories, Concept of Open Source Software.	12

Textbooks:

- A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition John Willey Publications.
- A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education.
- Linux by Sumitabh Das

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Operating System
List of Practical

1. Linux Directory Commands: pwd, mkdir,rm -rf, Is, cd, cd/, cd~
2. Linux File Commands: touch, cat, cat>, cat>>, rm, cp, mv, rename
3. Linux Permission Commands: su, id, useradd, passwd, groupadd, chmod, groupdel, chown, chgrp
4. Linux File Content & Filter Commands: head, tail, tac, more, less, grep, cat, cut, grep, comm, sed, tee, tr, uniq, wc, od, sort, diff.
5. Linux Utility Commands: find, bc, locate, date, cal, sleep, time, df, mount, exit, clear, gzip, gunzip.
6. Linux Networking Commands: ip, ssh, mail, ping, host
7. Edit Crontab file: To wall message on system on particular time automatically.
8. Vi editor: Create file, edit, save and quit. Highlighting the searched term within a file, cut, yank, undo.