Part A Introduction			
Program : Certificate	**Class : BCA I Semester**	**Year : 2022**	**Session : 2022-23**

1	**Course Code**	**S1-BCAB2T**
2	**Course Title**	Operating System -I
3	**Course Type (Core Course/Elective/Generic Elective/Vocational)**	Minor
4	**Pre-Requisite (if any)**	Open for all
5	**Course Learning outcomes (CLO)**	After the completion of this course, a successful student will be able to: • Describe the importance of computer system resources and the role of operating system in their management policies and algorithms. • Specify objectives of modern operating system and describe how operating systems have evolved over time. • Understand various process management concepts and can compare various scheduling techniques, synchronization and deadlocks. • Describe the concepts of memory management techniques. • Identify the best suited process management technique for any process. • Describe various file operations, file allocation methods and disk space management. • To understand and identify threats to operating systems and the security features to guard against them. • Learn to operate the Linux system.
6	**Credit Value**	**Theory – 4 Credits Practical – 2 Credits**
7	**Total Marks**	Max. Marks : 100 Min. Marks : 40

Part B – Content of the Course		
No. of Lectures (in hours per week) : 2 Hours per week		
Total no. of Lectures: 60 Hrs.		

Unit	Topics	No. of Lectures
1	**Introduction to Operating system:**What is operating system? History and evolution of OS, Basic OS functions, resource abstraction,	6

	types of operating systems – batch systems, multiprogramming systems, multiprocessing systems, time sharing systems, distributed OS, real time systems. Operating system for personal computers, workstations and hand-held devices.	
2	**Process management:** Process concepts, process states & process control block. Application for various operating systems in real world. Some prevalent operating systems – Windows, Unix/Linux, Android, Mac OS, Blackberry OS, Symbian, Bada etc.	14
3	**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, deadlock characterization, necessary and sufficient condition for deadlock. **Deadlock Handling Approaches:** Prevention, avoidance, detection and recovery.	14
4	**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.	12
5	**File management:** Concept of file system (File attributes, operations types), function 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

Part C- Learning Resources
Text Books, Reference Books, Other resources

Text Books:
- A Silberschatz, P.B. Galvin, G. Gagne, Operating systems concepts, 8th Edition, John Wiley Publications.
- A.S. Tanenbaum, Modern Operating systems, 3rd Edition, Pearson Education.
- Opearting System by Peterson.
- Linux by Sumitabh Das.
- मध्य प्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें

Reference Books:
- G. Nutt operating systems: A Modern perspective, 2nd Edition Pearson Education.
- W. Stallings, Operating systems, Internals & Design principles, 8th Edition, Pearson Education.

• M. Milenkovic, Operating Systems – Concepts and design, Tata McGraw hill. • Operating system design and concepts by Milan Milenkovic. **Suggested digital platform web links:** https://web.iitd.ac.in/~minati/MTL458.html https://www.cse.iitb.ac.in/~mythili/os/ https://www.youtube.com/watch?v=aCJ3YgoolHQ	

Suggested equivalent online courses:
https://nptel.ac.in/courses/106/102/106102132/

Part D- Assessment and Evaluation			
Internal Assessment: **Continuous Comprehensive** **Evaluation (CCE) :** Shall be based on allotted assignments and class tests. The marks shall be as follows:		**External assessment: University exam (UE):** **Time: 02.00 Hours**	
Assessment and presentation of assignment			
Class Test I **(Objective Questions)**			
Class Test II **(Descriptive Questions)**			
Class Test III **(Based on OS commands)**			
Total		**Total**	100
Any remarks / suggestions:			

Part A Introduction			
Program : Certificate	Class : BCA I Semester	Year : 2022	Session : 2022-23

1	**Course Code**	S1-BCAB2P	
2	**Course Title**	Operating System Lab - I	
3	**Course Type (Core Course/Elective/Generic Elective/Vocational)**	Minor	
4	**Pre-Requisite (if any)**	Open for all	
5	**Course Learning outcomes (CLO)**	After the completion of this course, a successful student will be able to: • Operate the Linux System. • Do Administration • Use Vi Editor	
6	**Credit Value**	**Practical – 2 Credits**	
7	**Total Marks**	Max. Marks : 100	Min. Marks : 40

Part B – Content of the Course		
No. of Lectures (in hours per week) : 1 Hours per week		
Total no. of Lectures: 30 Hrs.		

Unit	Suggestive list of Practical	No. of Lectures

	Linux:
	   a. **Linux Directory Commands:** pwd, mkdir, rm-rf, 1s, cd,cd / ,cd~
	   b. **Linux File Commands:** touch, cat, cat >, cat>>, rm, cp, mv, rename
	   c. **Linux permission commands:** su, id, useardd, passwd, groupadd, chmod, groupdel, chown, chgrp
	   d. **Linux File Content & Filter Commands:** head, tail, tac, more, less, grep, cat, cut, grep, comm, sed, tee, tr, uniq, wc, od, sort, diff.
	   e. **Linux Utility Commands:** find, bc, loacte, date, cal, sleep, time, df, mount, exit, clear, gzip, gunzip.
	   f. **Linux Networking commands:** ip, ssh, mail, ping, host
	   g. **Edit Crontab file:** to wall message on system on particular time automatically.
	   h. **Vi editor:** create file, edit save and quit. Highlighting the searched term within a file. Cut, yank, undo.
		30 Hrs.