INTRODUCTION TO OPERATING SYSTEM
(OPEN ELECTIVE)
(Effective from the academic year 2018 -2019)
SEMESTER – VII

Course Code	18CS654	CIE Marks	40
Number of Contact Hours/Week	3:0:0	SEE Marks	60
Total Number of Contact Hours	40	Exam Hours	03

CREDITS –3

Course Learning Objectives: This course (18CS654) will enable students to:

- Explain the fundamentals of operating system
- Comprehend multithreaded programming, process management, memory management and storage management.
- Familier with various types of operating systems

Module – 1	Teaching Hours
Introduction: What OS do, Computer system organization, architecture, structure, Operations, Process, memory and storage management, Protection and security, Distributed systems, Special purpose systems, computing environments. **System Structure:** OS Services, User OSI, System calls, Types of system calls, System programs, OS design and implementation, OS structure, Virtual machines, OS generation, system boot **Textbook1: Chapter 1, 2** **RBT: L1, L2**	08

Module – 2	
Process Concept: Overview, Process scheduling, Operations on process, IPC, Examples in IPC, Communication in client-server systems. **Multithreaded Programming:** Overview, Models, Libraries, Issues, OS Examples **Textbook1: Chapter 3,4** **RBT: L1, L2**	08

Module – 3	
Process Scheduling: Basic concept, Scheduling criteria, Algorithm, multiple processor scheduling, thread scheduling, OS Examples, Algorithm Evaluation. **Synchronization:** Background, the critical section problem, Petersons solution, Synchronization hardware, Semaphores, Classic problems of synchronization, Monitors, Synchronization examples, Atomic transactions **Textbook1: Chapter 5, 6** **RBT: L1, L2**	08

Module – 4	
Deadlocks: System model, Deadlock characterization, Method of handling deadlock, Deadlock prevention, Avoidance, Detection, Recovery from deadlock Memory management strategies: Background, swapping, contiguous memory allocation,	08

paging, structure of page table, segmentation.	
Textbook1: Chapter 7, 8 **RBT: L1, L2**	
Module – 5	
Virtual Memory management: Background, Demand paging, Copy-on-write, Page replacement, allocation of frames, Trashing, Memory mapped files, Allocating Kernel memory, Operating system examples File system: File concept, Access methods, Directory structure, File system mounting, File sharing, protection **Textbook1: Chapter 9, 10** **RBT: L1, L2**	08

Course outcomes: The students should be able to:

- Explain the fundamentals of operating system
- Comprehend process management, memory management and storage management.
- Familiar with various types of operating systems

Question Paper Pattern:

- The question paper will have ten questions.
- Each full Question consisting of 20 marks
- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:

1. A. Silberschatz, P B Galvin, G Gagne, Operating systems, 7th edition, John Wiley and sons,.

Reference Books:

1. William Stalling,"Operating Systems: Internals and Design Principles", Pearson Education, 1st Edition, 2018.
2. Andrew S Tanenbaum, Herbert BOS, "Modern Operating Systems", Pearson Education, 4th Edition, 2016