COURSE CODE**: CSC1036**	L-T-P**: 4-1-1**
COURSE NAME**: OPERATING SYSTEM**	CONTACT HOURS/WEEK**: 7**
COURSE TYPE**: CORE**	TOTAL MARKS**: 100** (INTERNAL**: 60,** EXTERNAL**: 40)**
NUMBER OF CREDITS**: 6**	NATURE**: GRADED**

COURSE OBJECTIVES:

1. To provide students the basic concepts of operating system such as process states, I/O organization and instruction sets
2. To familiarize the students with the concepts of deadlock handling in Operating system
3. To provide students the knowledge of scheduling, multiprogramming and memory management
4. The give students the knowledge of multiprogramming system

COURSE PREREQUISITE:

- Basic concepts of computer fundamentals

COURSE OUTCOMES:

At the end of the course, students will be able to:

- Recognize the design approaches of advanced operating systems such as memory architectures, scheduling, deadlock handling etc.
- Analyze the design issues of distributed operating systems.
- Evaluate design issues of multi processor operating systems.
- Identify the requirements of database operating systems and formulate the solutions to schedule the real time applications.

COURSE CONTENT:

Unit No & Name	Components of the Unit	No of contact hours	Marks
UNIT-I: **Review of computer organization**	• Major subsystems, instruction sets • I/O organization.	8	10
UNIT-II: **Memory architecture**	• Address protection, segmentation, virtual memory, paging, page replacement algorithms, cache memory • Hierarchy of memory types, associative memory.	12	15
UNIT-III: **Support for concurrent process**	• Mutual exclusion, shared data, critical sections, busy form of waiting	8	10

	• Lock and unlock primitives, synchronization block and wakeup.		
UNIT-IV: **Scheduling**	• Process states, process scheduling queue, schedulers, virtual processors, interrupt mechanism • Scheduling algorithms: First-Come, First-Served (FCFS) Scheduling, Shortest-Job-Next (SJN) Scheduling, Priority Scheduling, Shortest Remaining Time, Round Robin(RR) Scheduling, Multiple-Level Queues Scheduling, Implementation of concurrency primitive.	32	30
UNIT-V: **System deadlock**	• Deadlock characterization, Resource Allocation Graph, Prevention, detection and avoidance of deadlock • Banker's algorithm, detection algorithm	10	10
UNIT-VI:**Multiprogramming System**	• Queue management, I/O supervisors, memory management, File system, disk and drum scheduling. • Case Study: Some real operating system– semaphores, messages, shared memory.	12	15
UNIT-VII: **Advanced Topics**	• Secondary storage management, Security, Distributed operating system	8	10
	Total:	90	100

TEXTBOOKS/ RECOMMENDED READINGS:

- Tanenbaum, A. S. and Woodhull, A. S. *Operating Systems Design and Implementation* , PHI
- Stallings, W., *UNIX Network programming*, PHI.
- Kerninghan and Pike, *The UNIX programming Environment*, PHI.
- Peterson , J. L. and Silberschatz , A., *Operating System concepts*', Addison – Wesley
- Stallings, W. , *Operating Systems*, PHI
- Silberschatz, A., and Galvin, P. , *Operating System Concepts*, Addison-Wesley

COURSE ASSESSMENT DETAILS:

Internal assessment: Class tests, Assignments, Laboratory tests, Seminar

External assessment: End Semester Examination