COURSE TITLE	Fundamentals of Operating System
COURSE CODE	CC-204
COURSE CREDIT	3
Session Per Week	4
Total Teaching Hours	40 HOURS

AIM

To understand the fundamentals of processes, scheduling concepts, memory management, I/O and file systems in a typical operating system.

LEARNING OUTCOMES

On the completion of the course students will:
1. Know the components of an operating system
2. Understand the basics of process management and memory management.
3. Know the concepts of I/O and file systems
4. Provide information about the functions and roles of each of the components of the operating system.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
	Introduction to Operating System &Processor Management	10

1	• Introduction to Operating System
	    o What is Operating System?
	    o Operating system software
	    o Types of Operating System
		2

	• Memory Management: Early System
	    o Single User Contiguous Scheme
	    o Fixed Partitions
	    o Dynamic Partitions
	    o Allocation and deallocation methods
	    o Relocatable Dynamic Partitions
		3

	• Memory Management: Virtual Memory
	    o Paged Memory Allocation
	    o Demand Paging
	    o Page Replacement Algorithms
	      ▪ First In First Out
	      ▪ Least Recently Used
	    o Segmented Memory allocation
	    o Segmented/Demand Paged Memory allocation
	    o Virtual Memory
		5

2	**Processor Management**
	• Job Scheduler, Process Scheduler,
	• Job and Process Status
	• Process Control Block
	• Process Scheduling Policies
	• Process Scheduling Algorithms:
	      (Examples to be done with or without Arrival time)
	• First Come First Serve, Shortest Job Next, Priority Scheduling, Shortest
	   Remaining Time, Round Robin
		10	

3	**Deadlock and Process Synchronization**	**10**	

	• Deadlock
	   o Seven cases for deadlock
	   o Conditions for Deadlock
	   o Strategies for handling Deadlocks
	   o Starvation(Dining Philosophers Problem)
			5

	• Process Synchronization
	   o What is parallel Processing?
	   o Typical Multi processing configurations
	   o Process Synchronization Software-test and set, Wait & Signal
	   o Semaphores
	   o Process Cooperation- Producers and consumers
			5

4	**Device Management & File Management**	**10**	

	• Device Management
	   o Types of System Devices
	   o Communication among devices
	   o Management of I/O requests
	   o Device Handler Seek Strategies
	      ▪ FCFS
	      ▪ SSTF
	      ▪ Elevator(Look)
			6

	• File Management
	   o The File Manager
	   o Physicals to rage allocation
	   o Data Compression
	   o Access Control Verification module
			4

TEXT BOOK/S:

Text Book:
Operating Systems
Publication: Cengage learning By Flynn/McHoes,

REFERENCE BOOKS:

1. OperatingSystemsConceptsPublication:PearsonHigherEducationBySilberschatz,Galvin&Gagne

2. OperatingSystems:InternalsandDesignPrinciples,5/EPublication:PearsonHigherEducation
By William Stallings

WEB RESOURCES:

https://www.tutorialspoint.com
http://codex.cs.yale.edu/avi/os-book/OS9/slide-dir/
https://users.dimi.uniud.it/~antonio.dangelo/OpSys/materials/Operating_System_Concepts.pdf
www.studytonight.com/operating-system/cpu-scheduling
https://www.cs.uic.edu/~jbell/CourseNotes/OperatingSystems/5_CPU_Scheduling.html
http://www2.latech.edu/~box/os/ch05.pdf