



GUJARAT UNIVERSITY

BCA SEMESTER III SYLLABUS

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	<ul style="list-style-type: none"> • Introduction to Operating System <ul style="list-style-type: none"> o What is Operating System? o Operating system software o Types of Operating System • Memory Management: Early System <ul style="list-style-type: none"> o Single User Contiguous Scheme o Fixed Partitions o Dynamic Partitions o Allocation and deallocation methods o Relocatable Dynamic Partitions • Memory Management: Virtual Memory <ul style="list-style-type: none"> o Paged Memory Allocation o Demand Paging o Page Replacement Algorithms <ul style="list-style-type: none"> ▪ First In First Out ▪ Least Recently Used o Segmented Memory allocation o Segmented/Demand Paged Memory allocation o Virtual Memory 	2	
			3
			5

2	Processor Management <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Deadlock <ul style="list-style-type: none"> o Seven cases for deadlock o Conditions for Deadlock o Strategies for handling Deadlocks o Starvation(Dining Philosophers Problem) • Process Synchronization <ul style="list-style-type: none"> 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 	10 5 5
4	Device Management & File Management <ul style="list-style-type: none"> • Device Management <ul style="list-style-type: none"> o Types of System Devices o Communication among devices o Management of I/O requests o Device Handler Seek Strategies <ul style="list-style-type: none"> ▪ FCFS ▪ SSTF ▪ Elevator(Look) • File Management <ul style="list-style-type: none"> o The File Manager o Physicals to rage allocation o Data Compression o Access Control Verification module 	10 6 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>