10B11CI511: Operating System

Course Credit: 4
Semester: V

Introduction

This course examines operating system design concepts, data structures and algorithms, and systems programming basics. The Topics to be covered (tentatively) include:

- Computer and operating system structures
- Process and thread management
- Process synchronization and communication
- Memory management
- Virtual memory
- File system
- I/O subsystem and device management
- Selected examples in networking, protection and security

Course Objectives (Post-conditions)
Knowledge objectives:
1.Understand the theory and logic behind the design and construction of operating systems.
2. You will examine the algorithms used for various operations on operating systems.
3. You will Differentiate between various operating systems functionalities in terms of performance.
4.Become aware of the issues in the management of resources like processor, memory and input-output.
5.Know the problems in the design of operating system and study the probable solutions.
6. Learn to calculate the performance of cpu scheduling and disk sceduling
7. Learn File systems and methods of accesing
8. Understanding various security threats
9. An overview of advanced operating systems and compare the technical aspects of all the advanced operating systems

Application objectives:
1. to develop, implement, and debug various CPU scheduling algorithms
2. to develop, implement, and demonstrate the algorithms of synchronizing the processes
3. To develop algorithms to find deadlocks
4.To develop Disk scheduling algorithms

Expected Student Background (Preconditions)
Proficiency in Computer Programming (C, C++), Data structures and Computer Organization.
Topics Outline:

S NO	Topics	Hrs
1	Introduction to OS	4

2	Process Management	6
3	Interprocess communication	5
4	Resource Sharing and Management	6
5 6	Memory Management	6
7	Input Output Management	5
8	File Systems and Management	6
9	OS and Security	4
	Total	42

References

1. Silberschatz and Galvin :Operating System Concepts, 7th, Edition. Wiley
2. Tanenbaum, S.A, Woodhull,S.A:Operating Systems: Design and Implementation, 3rd ed., Prentice Hall.
3. Stallings, W:Operating Systems:Internals and design principles, 5th ed., Prentice Hall.
4. Nutt,G.:Operating Systems:A Modern Perspective, 3rd ed., Addison Wesley.

Evaluation Scheme:

S.No	Examination	Marks
1	T-1	15
2	T-2	25
3	T-3	35
4	*Internal Marks	25

*Internal Marks Breakdown:

Assignments 9 marks (3x3)

Quizzes 12 marks (3x4)

Regularity 4 Marks