Department Of Computer Science and Engineering
Kathmandu University
Dhulikhel, Kavre

Subject: Operating System **Course: COMP 307**

Level: B.E./B.Sc 3rd Year 1st Semester **Credit Hours: 3**

Course Objective: The main objective of this course is to provide the fundamental design and implementation of operating systems. Lectures are based on the linux operating system and research papers. Topics include process scheduling, memory management, virtual memory, file system, and an introduction to the distributed system.
Syllabus

Chapter **[4 hrs]**
Introduction: Introduction to Operating system, Simple batch system, multiprogramming batched system, time-sharing, personal computer, parallel system, distributed system, real-time system.

Chapter 2 **[4 hrs]**
Operating System Structures: System Component, OS services, system calls, system programs, system structure, virtual machine.

Chapter 3 **[6 hrs]**
Processes: Process concept, process scheduling, operation on processes, cooperating processes, thread, interprocess communication.

Chapter 4 **[8 hrs]**
Scheduling: introduction, scheduling criteria, scheduling algorithms, multi-processor scheduling, real-time scheduling.

Chapter 5 **[6 hrs]**
Deadlock: introduction, deadlock characterization, handling deadlocks, deadlock prevention, avoidance, detection, recovery.

Chapter 6 **[6 hrs]**
Memory Management: introduction, logical and physical addresses, swapping, contiguous allocation, paging, segmentations.

Chapter 7 **[4 hrs]**
Virtual memory: demand paging, the performance of demand paging, page replacement and an algorithm, allocation of frames, thrashing

Chapter 8 **[3 hrs]**

File system Interface: file concept, access method, directory structure, protection, consistency semantics

Chapter 9 **[2 hrs]**

I/O system: introduction, I/o interfaces, Kernel I/O subsystem

Chapter 10 **[2 hrs]**

Distributed system structure: introduction, distributed OS

References

1. Operating System Concepts, 7/e, Silberschatz, Galvin.
2. Operating Systems Design and Implementation, Third Edition, Tanenbaum