Course Number & Name: 227CSS-3 Operating Systems

Credits and Contact Hours: 3 crs; 2 hrs for Theory+2 hrs for Lab+1 hr for Tutorial

Course Coordinator's Name: Dr. Mohammad Arif Siddiqui

Textbook Title, Author, and Year: Operating System Concepts, *Silbershautz, Galvin and Gagne, 8th Edition, John Wiley & Sons.*

a. Supplemental Material:

- Andrew S. Tanenbaum, Modern Operating Systems, 3rd Edition, Prentice Hall

- P.C.P. Bhatt, Operating Systems, 2nd Edition, Prentice Hall India

- Jerry Peek, Grace Todino, John Strang, Learning the Unix Operating System, O'Reilly Media. Latest Edition.

- Unix and Shell Programming, by Sumitabha Das, McGraw- Hill ,2008

- William Stallings, Operating Systems, 4th Edition, Prentice Hall

Specific Course Information

a. Catalog Description: Introduction, history and evolution of operating systems, operating system structure, Introduction to basic UNIX Commands and vi editor, Programming in shell script, process management and scheduling, inter process communication, process coordination and synchronization, threads (overview, multithreading model and threading issues), CPU scheduling (Basic concepts and scheduling algorithms), deadlocks (deadlock characterization, methods for handling deadlock), deadlock prevention, deadlock avoidance and detection, memory management, introduction to file management and application.

b. Prerequisites: 111CSS-4

c. Required, Elective, or Selected Elective: Required

Specific Goals for the Course

a. Specific Outcomes of Instruction:

- CLO_1: Recognize operating system history, services, applications and types

- CLO_2: Write UNIX commands to perform essential operations.

- CLO_3: Describe various algorithms processes, threads, scheduling, synchronization, deadlock and virtual memory

- CLO_4: Explain operating system support for processes, threads, scheduling, synchronization, deadlock, virtual memory and file systems

- CLO_5: Develop programs to make use of various systems calls and implement standard problems/algorithms related to operating systems concepts

b. Student outcomes addressed by the course: a, b, c, i, j, k

Brief List of Topics to Be Covered

- Overview of Operating System

- Operating System Structure

- Process Concept

- Multithreaded Programming

- Process Scheduling

- Process Synchronization

- Deadlocks

- Memory Management Strategies

- Virtual Memory Management

- Implementing File Systems

- System Protection

- System Security and Real time systems