

206 Operating Systems.

Course Description and Objectives:

This course provides a comprehensive introduction to understand the underlying principles, techniques and approaches which constitute a coherent body of knowledge in operating systems. In particular, the course will consider inherent functionality and processing of program execution. The emphasis of the course will be placed on understanding how the various elements that underlie operating system interact and provides services for execution of application software.

Course Outcomes: After Completion of the subject student should be able to

- Master functions, structures and history of operating systems
- Master understanding of design issues associated with operating systems
- Master various process management concepts including scheduling, synchronization, deadlocks
- Be familiar with multithreading
- Master concepts of memory management including virtual memory

UNIT-1 Computer System and Operating System Overview:

Overview of computer operating systems, operating systems functions, protection and security, distributed systems, special purpose systems, operating systems structures and systems calls, operating systems generation.

UNIT -2 Process Management –

Process concept- process scheduling, operations, Inter process communication. Multi Thread programming models. Process scheduling criteria and algorithms, and their evaluation.

UNIT -3 Memory Management :

Swapping, contiguous memory allocation, paging, structure of the page table , segmentation

UNIT -4 Principles of deadlock –

system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery from deadlock,

UNIT-5 File system Interface-

the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection.

File System implementation- File system structure, file system implementation, directory implementation, allocation methods, free-space management

TEXT BOOKS :

1. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Operating Systems’ – Internal and Design Principles Stallings, Sixth Edition–2005, Pearson education

REFERENCES :

1. http://nptel.iitm.ac.in/courses/Webcourse-contents/IISc-BANG/Operating%20Systems/New_index1.html
2. Operating systems- A Concept based Approach-D.M.Dhamdhare, 2nd Edition, TMH