



OPERATING SYSTEM

PROF. SORAV BANSAL

Department of Computer Science and Engineering
IIT Delhi

TYPE OF COURSE : Repurposed | Core | UG

COURSE DURATION : 12 weeks (18 Jan' 21 - 09 Apr' 21)

EXAM DATE : 24 Apr 2021

PRE-REQUISITES : Introduction to Computer Science, Computer Architecture

INTENDED AUDIENCE : UG and PG students in EE/CS

INDUSTRIES APPLICABLE TO : Any computer systems hardware/software company

COURSE OUTLINE :

The course will provide an introduction to Operating Systems (OS), their design and implementation. We will discuss the goals of an OS, and some successful and not so successful OS designs. We will also discuss the following OS services in detail: thread scheduling, security, virtual memory, file system. We will understand the OS concepts practically by directly studying the source code of a small but realistic OS.

ABOUT INSTRUCTOR :

Sorav Bansal is an Associate Professor at the CS department in IIT Delhi, and works in the areas of programming languages and operating systems. His primary research interests involve investigating superoptimization-based compiler design and higher-level abstractions for OS/Network programming. Sorav obtained his B.Tech. from IIT Delhi, and Ph.D. from Stanford University.

COURSE PLAN :

Week 1: Introduction to OS Abstractions, Systems Calls and Threads

Week 2: X86 Processor Basics

Week 3: Address Translation (Virtual Memory)

Week 4: Processes and Memory Allocation

Week 5: Processes and Memory Allocation (contd.)

Week 6: Process Creation, Modes, Stacks and Traps

Week 7: Context Switching , Multiprocessors and Locking

Week 8: Abstracting Synchronization

Week 9: Abstracting Synchronization (contd.)

Week 10: Virtual Memory Swapping

Week 11: Files and Disk I/O

Week 12: Journaling Filesystem (Linux ext3)