

- **Kernel**

- Kernel/User Separation
- Privilege Mode
- System Calls
- Monolithic vs Microkernels

- **Memory Management**

- Fragmentation
- Segmentation
- Virtual Memory
- Locality
- Paging
  - Multi-Level Page Tables
  - Page Replacement
  - Thrashing

- **Processes**

- Process State
- Process Transitions
  - Interrupts, Traps, Exceptions
- PCB
- Fork

- **Threads**

- Kernel vs User Threads
- Concurrency and Parallelism
- TCB

- **Scheduling Algorithms**

- FIFO
- SJF
- RR
- MLFQ

- **Synchronization**

- Spin Locks
- Mutex
- Condition Variables
- Semaphore
- Monitor
- Deadlock

- **Disk**

- Disk Hardware
- Disk Algorithms
- SSD

- **File System**

- Logs
- Journaling
- i-nodes
- Sectors, Blocks, Files

- **RAID**

- Raid 0 - Striping
- Raid 1 - Mirroring
- Raid 2 - Parity Bit Drive
- Raid 5 - Striping Parity Bit