

**CSCI 5573: Advanced Operating Systems**  
**Fall 2019**  
**Course Content**

- Introduction
  - Review of Fundamental Concepts of Operating Systems
- Linux Internals
  - System Calls
  - Loadable Kernel Modules
- Virtualization
  - Virtual Machine Monitors
  - Machine Virtualization
  - Binary Instrumentation
  - Xen, VMWare, Denali, Terra
- System Support for IoT and Smart city
  - Lightweight virtual machines – Containers, Dockers
  - Code migration
  - EdgeX, Kura
  - Serverless computing
- OS for small devices
  - Android OS
- File system
  - NFS, FFS, AFS, Coda
  - Log structured file system, Sprite
  - File system in user space (FUSE)
- OS in 70's
  - Multics, Unix, Hydra, Mach, VAX/VMS
- Concurrent execution
  - Threads, events, asynchronous/synchronous I/O
- Operating System Structure
  - SPIN, Exokernel, L3 Micro-kernel
- Current Research Topics