

Foundations of Operating Systems

Course Description

This graduate course provides students with a foundational knowledge in operating system concepts. Students will gain a detailed understanding of appropriate operating system constructs that involve OS abstractions and mechanisms. Students will also understand the constructs of multithreading and resource management in compute systems.

- Operating system: the software that supports a computer's basic functions, such as scheduling tasks, executing applications, and controlling peripherals.
- Types of operating systems: Microsoft Windows, Linux, macOS, iOS, Android
- Multithreading:
 - Multithreading is a CPU (<u>central processing unit</u>) feature that allows two or more instruction threads to execute independently while sharing the same process resources.
 - A thread is a self-contained sequence of instructions that can execute in parallel with other threads that are part of the same root process.
 - When data scientists are training <u>machine learning</u> algorithms, a multithreaded approach to programming can improve speed when compared to traditional <u>parallel multiprocessing</u> programs.
- Resource management:
 - refers to techniques for managing <u>resources</u> (components with limited availability)

CSC 507 1

Module 1

CSC 507 2