

CSE 506 Operating Systems

Fall 2024

Course Description:

This course is an in-depth study of important concepts and techniques found in modern computer operating systems. The course focuses on an in-depth study of such important issues as virtual memory, resource management, locking and synchronization, file systems, networking, safety and security, and multiprocessor support, with an eye to recent directions in these areas. Textbook readings are supplemented where appropriate by papers from the research literature. An important part of the course is the case study of an actual modern operating system (e.g., Linux). Students study the source code for this operating system and do programming exercises and projects that involve modifying the operating system, testing their code's stability and functionality, and measuring its performance

Class hours: TuTh 5:00pm ~ 6:20pm

Classroom: B205

Office hours: TBD

Instructor:

YoungMin Kwon

Office: B420

email: youngmin.kwon at sunykorea dot ac dot kr

Course Website:

<http://www3.cs.stonybrook.edu/~youngkwon/cse506/>

Textbook and References:

Main text book 1: "Linux Kernel Development," 3rd Ed., Robert Love, Addison Wesley, ISBN: 978-0-672-32946-3 (https://www.amazon.com/Linux-Kernel-Development-Robert-Love/dp/0672329468/ref=sr_1_1?ie=UTF8&qid=1503882100&sr=8-1&keywords=9780672329463)

Main text book 2: "Understanding the Linux Kernel," 3rd Ed., Daniel P. Bovet and Marco Cesati, O'Reilly, ISBN 978-0-596-00565-8 (https://www.amazon.com/Understanding-Linux-Kernel-Third-Daniel/dp/0596005652/ref=sr_1_1?s=books&ie=UTF8&qid=1503882167&sr=1-1&keywords=9780596005658)

Grading:

Midterm exam: 40%

Final project: 55%

Attendance: 5% (Missing more than 20% of the class will fail the course)

Major Topics Covered in the Course:

- System Calls
- Process Management
- Handling Interrupts
- Memory management
- I/O subsystem

Academic integrity:

Students should pursue their academic goals in an honest way that does not put you at an unfair advantage over other students. You are responsible for all work you submitted and representing other's work as yours is always wrong. Faculty is required to report any suspected instance of academic dishonesty to the school. Regarding your homework, you are encouraged to discuss it with others, but you should write your own code. For more information please refer to

http://www.stonybrook.edu/commcms/academic_integrity/index.html

Students with disabilities:

If you have a physical, psychological, medical or learning disability that may impact your course work, please let the instructor know. Reasonable accommodation will be provided if necessary and appropriate. All information and documentation are confidential.

Critical incident management:

The University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn.

Tentative Course Schedule:

Date	Topics
Week1	Introduction, Operating System overview
Week2	Linux & QEMU install, Linux install on VM Kernel source code download, build, launch
Week3	System calls
Week4	Kernel data structure
Week5	Process management
Week6	Interrupts
Week7	Kernel Synchronization
Week8	Time Management
Week9	Process Scheduling
Week10	Memory Management
Week11	Virtual File System
Week12	Block I/O
Week13	Devices and Modules
Week14	Project presentations