

Operating Systems

2024-2025 Spring Semester

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Course Description

This course provides an in-depth understanding of operating systems, their architecture, and their functionalities. Topics include process management, memory management, file systems, concurrency, and security.

Course Objectives

By the end of this course, students will be able to:

- Understand the fundamental concepts of operating systems.
- Explain and apply process management techniques.
- Analyze memory and storage management strategies.
- Implement basic synchronization and concurrency mechanisms.
- Discuss security and protection mechanisms in operating systems.

Textbook and References

Recommended Resources:

- Silberschatz, A., Galvin, P. B., & Gagne, G. (2018). Operating System Concepts (10th Edition). Wiley.
- Stallings, W. (2018). Operating Systems: Internals and Design Principles (9th Edition). Pearson.
- Tanenbaum, A. S., & Bos, H. (2015). Modern Operating Systems (4th Edition). Pearson.

Weekly Schedule

Week	Topic	Reading/Assignments
Week 1	Introduction to Operating Systems	Chapter 1 (Silberschatz)
Week 2	OS Structure and Design Principles	Chapter 2
Week 3	Process Concepts and Scheduling	Chapter 3
Week 4	Threads and Multithreading Models	Chapter 4
Week 5	CPU Scheduling Algorithms	Chapter 5
Week 6	Process Synchronization and Deadlocks	Chapters 6-7

Week 7	Wrap-Up and Review Week	Review Chapters 1-6
Week 8	Memory Management: Segmentation and Paging	Chapter 8
Week 9	Virtual Memory Systems	Chapter 9
Week 10	File Systems: Structure and Implementation	Chapter 10
Week 11	I/O Systems and Disk Management	Chapter 11
Week 12	Security and Protection Mechanisms	Chapter 12
Week 13	Distributed Systems Overview	Chapter 16
Week 14	Case Studies: Windows, Linux, and Android OS	Supplementary Materials
Week 15	Wrap-Up and Review Week	Review Chapters 7-14
Week 16	Final Exam	Comprehensive Review

Assessment

- Midterm Exam: 40%
- Final Exam: 60%

Good luck, and let's have a great semester exploring the world of Operating Systems!

Wish all of you a successful, happy and healthy academic year.

Please send your questions and suggestions to my e-mail.