Date: **Saturday, May 5**
                3:25pm to 5:25pm; please be there by 3:15pm
Location: **MCB 332 (usual classroom)**

Important: *send email by Thursday if you are planning to take the final. If nobody signs up, it won't be offered.*

Format:

The final exam will consist of 4-7 questions.

It will be **closed book, closed notes, closed computer/without wireless access.** However, you are **allowed to bring one letter-sized sheet of paper with prepared notes** (you may use front and back of that sheet.) In addition, you may also bring the sheet of notes you previously prepared for the midterm.

You are responsible for the content of lectures 1 through 26. This includes, among others:

- Introduction to OS: general goals & principles of operating systems.

- Threads & processes: context switching, mode switching, procedure switching, context management, threading & process APIs.

- Concurrency & Synchronization: critical section problem, race conditions, approaches for guaranteeing mutual exclusion, including locks, semaphores, monitors, spinlocks & disabling interrupts.

- Deadlock: conditions, detection & recovery.

- Scheduling: general goals & constraints, priority scheduling, FCFS, RR, SPN, MLFQS, Lottery Scheduling.

- Virtual memory basics: address translation, memory protection, page table & TLB management; physical memory management: buddy systems and bitmap-based allocation; virtual page replacement strategies, working set & thrashing; segmentation.

- Disks & Filesystems: disk characteristics, buffer cache, general design of filesystems, file allocation & layout strategies including indexed files, directory representation and lookup, consistency in filesystems, write-ordering & journaling, virtual filesystem interfaces, volume management, RAID.

More weight will be given to material covered since the midterm.

Silberschatz covers this material in Chapters 1-12, 14-15.

The final may contain questions related to projects 0-3.