Final Exam Review Topics – CSC 139

For the final, study chapters 1 – 8 (stop at graphing). Concentrate on the following (although, all topics should be studied):

- Understand computer system operations (controllers, interrupts, memory, buffer, cache, etc.)
- Exceptions, system calls, interrupt
- Computer system architecture (symmetric, asymmetric)
- Operating System structures
- Operating System design models
- Processes
- PCB, context switching, registers, counters, quanta
- Memory layout
- Process state
- O/S execution modes (kernel, user)
- Process creation and communication
- Pipes (ordinary, named pipes)
- Threads and concurrency
- Multi-threading
- Concurrency/parallelism
- Multicore Programs
- Multiprogramming (advantages, disadvantages, challenges for programmers)
- Thread libraries
- Thread Cancellation
- Scheduler operations
- Amdahl's Law
- Scheduling algorithms (FCFS, SJF, SJF with pre-emption, round robin)
- Histogram of CPU burst
- Dispatcher
- Multilevel feedback queue
- Multicore Processor Scheduling
- Affinity
- Real time scheduling
- The critical section in synchronization
- Peterson's Solution
- Hardware Solution for CS
- Software solution
- Semaphores
- Monitors

- The philosopher’s problem for synchronization
- Mutex locks
- Spin locks
- Readers/writers problem
- Deadlock and starvation
- Definition of a deadlock