Coverage

- Total: 50 points; 1 min / point
  - Sessions 14-23, exercises 5-8 and project 2
- Multiple choice, short answer, problem solving
Monitors, Condition Variables, and Readers-Writers

- Definitions
  - Monitor
  - Lock
  - Condition variable
Monitors, Condition Variables, and Readers-Writers

- Short answers
  - Hoare vs. Mesa monitors
  - Correct a broken solution (readers-writers)
  - Semaphore vs. monitors
Deadlocks

- Definitions
  - Deadlock
  - Starvation
  - Checkpointing
Deadlocks

- Short answers
  - Correct a broken solution (dining philosophers)
  - Four conditions for deadlocks
  - Deadlock prevention techniques
  - Banker’s algorithm
Memory Protection

- Definitions
  - Interprocess communication
  - System call
Memory Protection

- Short answers
  - Hardware-supported mechanisms
  - Software-supported mechanisms
  - Steps to switch between kernel and user modes
  - Context switching between processes vs. threads
Address Translation

- Definitions
  - Segment
  - External fragmentation
  - Internal fragmentation
  - Translation lookaside buffers (abbreviated TLB)
Address Translation

- Short answers
  - Base-and-bound translation
  - Segmentation-based translation
  - Paging-based translation
  - Segmented-paging translation
  - Paged page tables
Caching and TLBs

- Definition
  - Caching
  - Temporal locality
  - Spatial locality
  - Cache pollution
  - Translation lookaside buffer
Caching and TLBs

- Short answers
  - Design issues of caching
  - Four types of cache misses
  - Ways to perform TLB lookups
  - Write-through vs. write-back policies
  - Effective access time
Demand Paged Virtual Memory

- Definitions
  - Demand paging
  - Page fault
  - Belady’s anomaly
  - Thrashing
  - Working set
Demand Paged Virtual Memory

- Short answers
  - Steps to carry out a page fault
  - Page replacement policies
  - 4 state bits for a page table entry
Device Management

- Definitions
  - Polling/interrupts/DMA/double buffering
  - Device controller/device driver
  - Memory-mapped I/O
  - Disk-related terms
  - Disk measurement metrics
Device Management

- Short answers
  - Categories of I/O devices
  - Ways to access a device
  - Disk arm scheduling policies
  - Latency and bandwidth computations