

# CSCI 3323 (Principles of Operating Systems), Fall 2014

## Review for Midterm Exam

### 1 Format of the exam

The exam will be in class October 22. You will have 75 minutes. Like the quizzes, it is “open book/notes”, which means you can consult paper or electronic copies of the textbook and your notes, sample solutions *from this year only*, your own graded work, and anything on the course Web site. You may not use other books, materials from this course from previous years, a calculator or computer (except as needed to consult allowed sources), or (of course) each other’s papers. Many questions are likely to be similar in format to those in the quizzes or homework assignments; there will also probably be some multiple-choice or true/false questions. You might be asked to write or comment on code/pseudocode, but it’s unlikely that you’ll be asked to write more than a few lines. Most questions will be somewhat more difficult than the quiz questions but less difficult (or at least less time-consuming) than the homework problems.

### 2 Lecture topics to review

You are responsible for all material presented during lecture (including any topics not covered in the textbook), but the following is a list of topics I consider most important.

- History/evolution of operating systems.
- Functions we would like an operating system to provide.
- What functionality we need (and/or can expect) from hardware in order to write a reasonable operating system.
- System calls.
- The process abstraction.
- Implementing processes (what’s involved in a context switch, what kinds of things are in a process table, etc.)
- Processes versus threads.
- Why interprocess communication (IPC) is needed.
- Mechanisms for IPC (shared variables, semaphores, monitors, message-passing).
- IPC problems (mutual exclusion, producers/consumers, dining philosophers) and their solutions.
- Scheduling and scheduling algorithms.

### 3 Reading to review

You should have read all of chapters 1 and chapter 2. Probably the best way to approach reviewing the reading is to skim all of it, paying more attention to topics I covered in class, and (re)read the last (summary) section of each chapter.

### 4 Other tips

You should also be sure to review all homeworks and quizzes (and sample solutions) and any non-opinion minute essay questions.