

# Operating Systems

CS 311  
Spring 2012

**Instructor:** Tom Kelliher  
Hoffberger 140  
Office: (410) 337-6189  
kelliher[at]goucher.edu  
<http://phoenix.goucher.edu/~kelliher/>  
Office hours: MW 10:00–11:00am, Tu 10:00am–12:00pm. Other times by appointment.

**Class:** Van Meter 201, MWF 2:30–3:20pm  
<http://phoenix.goucher.edu/~kelliher/s2012/cs311/>

**Objectives:** Our main objective is to learn how modern operating systems are designed, through study of their fundamental pieces and through studying, modifying, and building upon the Linux kernel. At the end of the course, you will be able to:

1. Describe the fundamental principles of concurrent processes/threads and manage that concurrency.
2. Explain that an operating system is a collection of algorithms and data structures, giving illustrations.
3. Assess the various CPU and disk scheduling algorithms.
4. Analyze the memory management components of operating systems.
5. Implement new system calls in Linux.

**Textbooks:**

1. A. Silberschatz, P. B. Galvin, and G. Gagne, *Operating Systems Concepts*, 8th ed., Wiley, 2009. Required.
2. S. P. Harbison and G. L. Steele, Jr., *C: A Reference Manual*, 5th ed. Prentice Hall, 2002. Optional, not available in College bookstore.

**Grading:** **Grade Distribution**

A = [92%–100%], A- = [90%–92%), B+ = [88%–90%), B = [82%–88%), B- = [80%–82%), etc. Grades are “one point rounded.”

**Course Point Distribution**

The following is tentative. There are approximately 1,000 total points for the course.

1. Assignments and projects — There will be six written assignments. Each assignment will be worth 30 points. There will be two projects involving the Linux kernel:
  - (a) Implement a loadable kernel module, 60 points.

(b) Implement a system call, 60 points.

These projects will be implemented within a virtualized Linux environment. 300 points total for assignments and projects.

2. Quizzes. There will be approximately 10 weekly quizzes. Each quiz will be worth 10 points and will be taken outside of class. 100 points total for quizzes.
3. Semester exams. There will be two exams, tentatively on the following dates: Feb. 27 and Apr. 9. Each will be worth 150 points. If you need to re-schedule an exam, it is your responsibility to let me know a few days beforehand. 300 points total for exams.
4. Final. There will be a cumulative final, scheduled by SAS. The final is worth 300 points.

**Integrity:** Academic dishonesty will not be tolerated. We are all bound by the Academic Honor Code.

**Course Handouts:**

Course handouts may be made available once in class. After that, they may be obtained from the class home page.

**Attendance:** Attendance of classes is expected. It is your responsibility to catch up on missed class work.

**Electronic Communication:**

From time-to-time, I will need to send e-mail messages to the class. These messages will be addressed to your official Goucher e-mail addresses. You are responsible for checking your e-mail on a timely basis.

**Distractions:** Cell phones must be turned off or set to “silent” during class. If you must enter late, do so as unobtrusively as possible. Likewise if you must leave early. Please use mental telepathy if you must hold a personal conference during class. I have ways of making you not talk!

**Disabilities:** Any student with a documented disability should contact the Academic Center for Excellence (ACE) to arrange for academic accommodations for the course. Carefully follow all ACE’s policies and procedures. Once you have coordinated with ACE, email me to make me aware of your accommodation. I will receive official correspondence from ACE; however, I would also like to receive an email from all students requiring accommodations for the semester. If your accommodation involves taking exams at ACE, it is your responsibility to schedule your exams with ACE. When scheduling exams with ACE, be sure to carbon copy me on any emails with ACE so that I have confirmation that everything is in order. This process is to be repeated for all exams throughout the semester.

**Achieving Academic Success:**

If you are struggling in this or other courses, I strongly encourage you to reach out for help sooner rather than later. Proactive strategies could include contacting the instructor directly, attending office hours, and/or taking advantage of the multitude of academic services that the Academic Center for Excellence

offers. The responsibility is upon you to recognize when you need help and to take the steps necessary to succeed. Goucher College has a variety of resources available to help you succeed in your classes; use them!

**Student-Athletes:**

According to the Goucher College policy on Student-Athlete Responsibilities, all student-athletes are expected to contact me at the beginning of the semester to request approval for absences associated with athletic events (or scheduled departure times for such events) that conflict with the regularly scheduled class time. The approved absences will then be listed on a contract signed by both me and the student-athlete. Additionally, it is the responsibility of the student-athlete to complete all assignments covered in class during the approved absences and to obtain all handouts, assignments, and notes from the missed class(es). Student-athletes who fail to coordinate with me prior to any class absences will not be permitted to make-up missed assignments.

**Student Responsibilities in Academic Conflicts (Field trips, Performances, etc.):**

According to the Goucher College policy on Academic Conflicts, all students in situations in which you are confronted with obligations or responsibilities (ranging from participation in field trips in the visual arts or the sciences or rehearsals or performances in the performing arts to extra-curricula activities at which students are representing the college such as model senate events or varsity athletic contests) that conflict with regularly scheduled academic classes, are expected to contact me at the beginning of the semester, or as soon as the conflict is known, to request approval for absences that conflict with the regularly scheduled class time. The approved absences will then be listed on a contract signed by both myself and the student. Additionally, it is the responsibility of the student to complete all assignments covered in class during the approved absences and to obtain all handouts, assignments, and notes from the missed class(es). Students who fail to coordinate with me prior to any class absences will not be permitted to make-up missed assignments.