

CSCI 4210/6140

Operating Systems

Syllabus

David Goldschmidt – goldschmidt@gmail.com

Office: Amos Eaton 115

Office hours: Mon/Tue/Thu 1:00-2:50PM

<http://www.cs.rpi.edu/~goldsd/csci4210-s18.php>



Contact information

- Instructor: David Goldschmidt (goldschmidt@gmail.com)
 - Office: Amos Eaton 115
 - Office hours: Mon/Tue/Thu 1:00-2:50PM

- Graduate TAs:
 - Lixin Chen
 - Diya Li (50%)
 - Shengxuan Liu

- Undergraduate mentors:
 - Christopher Jones
 - Ryan Manske
 - Mohammed Moftah

*Do not email our TAs or mentors;
instead, use Piazza...!*



Purpose of this course

Prerequisites: CSCI 2300 and either CSCI 2500 or ECSE 2660

- CSCI 4210: Discussion of various aspects of computer operating systems design and implementation. Topics include I/O programming, concurrent processes and synchronization problems, process management and scheduling of processes, virtual memory management, device management, file systems, deadlock problems, system calls, and interprocess communication. Programming projects are required.
- CSCI 6140: Topics include analysis of multiprogramming systems, virtual memory, computer system performance, and queuing theory. The course also discusses tools for synchronization of parallel programs and algorithms for mutual exclusion.



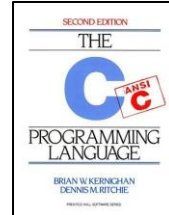
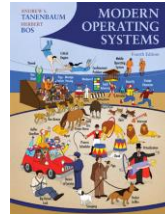
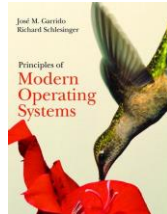
Learning objectives

- Demonstrate the ability to compare, contrast, and apply concepts of both classic and modern operating systems
- Analyze operating systems by designing and implementing both analytical and simulation models, the latter via a programming language
- Implement specific operating system constructs in C on a Linux platform to create real-world systems-level programs and applications
- **CSCI 6140:** Perform detailed analysis of multiprogramming systems, synchronization, and queuing theory problems



Textbooks and resources

- Textbooks and other resources are recommended (i.e., there are no required textbooks); key texts include:
 - Principles of Modern Operating Systems, 2nd ed.** by Garrido, Schlesinger, and Hoganson [ISBN 9781449626341]
 - Modern Operating Systems, 4th ed.** by Tanenbaum and Bos [ISBN 9780133591620]
 - The C Programming Language, 2nd ed.** by Kernighan and Ritchie [ISBN 0131103628]



Course website and schedule

- The course website is:
<http://www.cs.rpi.edu/~goldsd/csci4210-s18.php>
- See the course website for the schedule
 - The schedule will likely change as the semester progresses!



Piazza and announcements

- We will use Piazza for course announcements, discussions, and for posting questions (and answers)
 - Piazza URL is: <https://piazza.com/rpi/spring2018/csci42106140>
- Your RPI email addresses have been automatically added to Piazza (feel free to add other email addresses)
- Ask questions via Piazza; also answer questions via Piazza!
- Check your RPI email at least once per day, especially when we have inclement weather...



Attendance/classroom policies

- Attendance is required; please attend class and be prepared to participate in class discussions
- Please remember to turn off cellphones and other non-classroom electronic devices before class begins
- Please shut your laptops unless you are actively using them to take notes or participate in class activities, etc.
- **IMPORTANT:** For prescheduled and unforeseen absences, see <http://studentlife.rpi.edu/student-success/excused-absence>



Required software and OS

- We will use a variety of programming languages, all of which have compilers and interpreters available for free via the Web
- Expect to learn and program primarily in C, but also in C++, Java, Python, etc.
- We will use Submittity; therefore, it is highly recommended that you use Ubuntu 16.04.3 LTS
 - For Windows: <https://www.ubuntu.com/download/desktop>
 - General download: <https://www.ubuntu.com/download>
 - Also check out this free cloud-based platform: <https://c9.io> (be sure to download your work often in case the cloud blows up!)



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Your code must work on Submittity.
It is **not** a valid excuse to state that your code worked on "your" platform!



Individual assignments

- There will be four individual homework assignments
 - Homeworks will be in C and auto-graded via Submitty
 - Due dates are various Fridays (all by 11:59PM)
 - Students in CSCI 6140 may have additional work
- There will be nine in-class pop quizzes
- There will be two in-class exams on 2/22 and 4/9
 - You may bring one double-sided crib sheet to the first exam
 - You may bring two double-sided crib sheets to the second exam
- There will be a final exam in this course (5/7-5/11)
 - You may bring three double-sided crib sheets to the final exam



Individual or team assignments

- There will be two simulation projects
 - These will be primarily coding assignments in C, C++, Java, or Python
 - Project deliverables will be submitted and, to the extent possible, auto-graded via Submitty
 - Due dates are 2/28 and 4/25 (by 11:59PM)
 - You can optionally work in a team of up to three students
 - Teams can have a mix of undergraduate and graduate students
 - Students registered for CSCI 6140 will have additional analysis work to complete



Grading criteria

▪ Grading breakdown is as follows:

Homeworks (4)	32%
Projects (2)	20%
Quizzes (best 8 of 9)	8%
Exams (2)	20%
Final Exam	20%

▪ Late days in Submitty:

- Late days are intended to cover minor illnesses, hardware malfunctions, schedule conflicts with other assignments, and other minor (or absurd) mishaps
- Each student will initially be given five late days for the semester
- To use a late day, simply submit the assignment as per usual via Submitty; you do not need to notify the TAs or instructor
- No more than three late days may be used for any one assignment



Grading policies

- You may appeal a grade by contacting me within five days of grades being announced
- Quizzes and exams will be handed back and reviewed in class
 - Such assignments will then be available during my office hours
- Final course grades are determined by rounding, then applying the following ranges:
 - 93-100 A; 90-92 A-; 87-89 B+; 83-86 B; 80-82 B-; 77-79 C+; 73-76 C; 70-72 C-; 67-69 D+; 60-66 D; 0-59 F
 - For students registered for CSCI 6140, the D+ and D grades are replaced with an F



CSCI 4210 versus CSCI 6140

- For students registered for the graduate-level CSCI 6140 course, please note the following:
 - Various assignments will have additional questions to address
 - Overall grading criteria will essentially be the same; however, there will be no D or D+ course grades (these translate to F)
 - All other course policies are the same
- Teams can contain both undergraduate and graduate students



Disability services for students

- From <http://studenthealth.rpi.edu/disabilityservices>:
 - “The Office of Disability Services for Students (DSS) assists Rensselaer students with disabilities in gaining equal access to academic programs, extracurricular activities, and physical facilities on campus. DSS is the designated office at Rensselaer that obtains and files disability-related documentation, assesses for eligibility of services, and determines reasonable accommodations in consultation with students.”
- Contact: dss@rpi.edu or 518-276-8197 or Academy Hall 4226
- For accommodations, please contact DSS this week!
 - You must renew your accommodations each academic year



Academic integrity

- Rensselaer Handbook of Student Rights and Responsibilities:
 - “Intellectual integrity and credibility are the foundation of all academic work. A violation of the Academic Integrity policy is, by definition, considered a flagrant offense to the educational process. It is taken seriously by students, faculty, and Rensselaer and will be addressed in an effective manner.”
 - “If found responsible for committing academic dishonesty, a student may be subject to one or both types of penalties: an academic (grade) penalty administered by the professor and/or disciplinary action through the Rensselaer judicial process described in this handbook.”

<http://www.rpi.edu/dept/doso/resources/main/2014-2016StudentHandbookrevOctober2015.pdf>



Academic integrity policy

- Individual assignments in this course must be the sole work of each individual student; for team-based work, such work must be the sole work of the individual team members
- You must write your own code; use online resources sparingly
- If found in violation of the academic dishonesty policy:
 - You will receive a grade of zero on the given assignment
 - For a second offense, you will receive an F in the course
 - Each incident will be reported to the Dean of Students and Department Head
 - Cheating may cause you to be ineligible to mentor for the department, participate in departmental organizations, etc.

