

CSE 2431 Systems II
Introduction to Operating Systems
Spring '23
WF 9:35-10:55, Baker Systems 136
Instructor: Dr. Jaimie Kelley



Department of
Computer Science and Engineering

Discord Server: <https://discord.gg/vs5Dtc8S>



Contact Information:

Email address: kelly.530@osu.edu

Office: Dreese Laboratories 287

Text messages: Discord PM Preferred

Undergraduate Graders and email addresses:

Chris Barlas, barlas.3@buckeyemail.osu.edu

Amanda Futterman, futterman.7@buckeyemail.osu.edu

Jessie Shen, shen.1369@buckeyemail.osu.edu

Course Objective, Prerequisites, and Exclusions:

Introduction to operating system concepts: process, CPU scheduling, memory management, file system and storage, and multi-threaded programming. Must have taken CSE 2421 or (CSE 2451 and or ECE 2560); and be enrolled in CSE, CIS, Data Analytics, or ECE majors. Not open to students with credit for CSE 5431.

Learning Objectives (*What am I getting out of this as a student?*):

- Be familiar with mechanisms for context switching, including system calls, interrupts, and exception control flows.
- Be competent with process control blocks and CPU scheduling.
- Be competent with memory hierarchy and memory management.
- Be familiar with file systems and disk scheduling algorithms.
- Be familiar with process synchronization and inter-process communication.
- Be familiar with threads and multi-threaded programming.

Textbooks/Readings (*What should I read to prepare?*):

1. *Operating System Concepts*, Silberschatz, Galvin, Gagne, 8th, 9th, or 10th Edition, Wiley. The 8th edition eBook can be accessed for free through <https://learning.oreilly.com/library/view/operating-system-concepts/9780470128725/>. There is a Kindle version of the 10th edition available for purchase at \$84 or rent at \$35 through <https://www.amazon.com/Operating-System-Concepts-Abraham-Silberschatz-ebook/dp/B07CVKH7BD/>.

2. *Operating Systems: Three Easy Pieces*, Remzi and Andrea Arpaci-Dusseau, 1st Edition, Arpaci-Dusseau Books. This free, online book is available through <https://pages.cs.wisc.edu/~remzi/OSTEP/>. There is a Kindle version available for \$10 through <https://www.amazon.com/Operating-Systems-Three-Easy-Pieces-ebook/dp/B00TPZ17O4>. A print copy of this book is available through either source for under \$40.

3. **Optional:** *Computer Systems: A Programmer's Perspective*, Bryant, O'Hallaron, 2nd Edition, Pearson Prentice-Hall.

Grades (*How will my grade be determined?*):

Lab Assignments	25%
Homework Assignments	20%
Attendance and Participation	5%
Midterm 1 (Feb. 1)	10%
Midterm 2 (Mar. 10)	20%
Final Exam	20%

Homework (20%): Homework will be assigned in class and is due at the **start** of class on the date specified on the assignment. The homework can then be handed in anytime until the **start** of the next class for a **20%** penalty of the point value of the assignment. No assignments will be accepted after that time. Graded homework must be the student's own work. The homework must be typed except for needed diagrams. There will be approximately 5 homework assignments, and the lowest score will be dropped. Graded homework assignments will be reviewed in class or have answers posted.

Labs (25%): Programming assignments/labs will be assigned during class. Labs must be submitted by 11:59 pm on the date due as specified on the assignment. A late penalty of 10% **per hour** will be assessed, for instance, if a lab is submitted at 12:00 am or 12:59 am there is a 10% penalty. ***Labs must be the student's own work.*** There will be approximately 4 labs.

Attendance and Participation (5%): Attendance will be taken during class. Participation in active learning is proven to help students retain information long term. Participation assignments will not be graded for correctness, need not be typed, and may be worked on collaboratively with 1-2 other students so long as the breakdown of who did what is indicated. Students must participate to be counted as in attendance. It is the student's responsibility to find out what material was missed or assignments given if unable to attend class.

Midterms (10%, 20%): The midterms are closed notes, closed book. No calculators are permitted. Makeup exams require a good reason and appropriate documentation be provided. Makeup exams will not be given after graded exams are returned.

Final Exam (20%): The final exam is comprehensive and is closed notes, closed book. No calculators are permitted. The exam date and time is determined by the OSU Registrar's Office. Final exams may not be taken early.

Note: If there are unforeseen emergencies that impact the grading scheme, appropriate adjustments will be made. An example of an unforeseen emergency would be a fire alarm going off during the final exam.

This syllabus is a living document and will be updated if needed during the course of the semester. Additional details can be found on Carmen in the electronic version of the syllabus, which is much longer. Details omitted here for space include: Course Schedule, Course Policies. These can be found on Carmen. In way of summary:

**“Help will always be given at OSU, to those who ask for it.”
–Albus Percival Wulfric Brian Dumbledore**

Academic Misconduct:

Academic Integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Students are required to follow the Ohio State “Code of Student Conduct” (Section 3335-23-04). All students are expected to complete all academic and scholarly assignments with fairness and honesty. Failure to follow the rules and guidelines established in the University’s Code of Student Conduct may constitute Academic Misconduct.

Among the restrictions, students are prohibited from:

- Providing or receiving information during exams. ***Keep your eyes on your own work.***
- Receiving assistance on graded homework and lab problems. Providing assistance on graded homework and lab problems to students in the course during this or any other semester is also prohibited. ***You learn more when trying to do the work on your own.***
- Submitting plagiarized (i.e. copied but unacknowledged) work for credit. ***Always cite sources, even if the source is the course textbook.***

Note: Faculty is required by the University to report any suspected violation of these conditions to the Council on Academic Misconduct. Misconduct cases are resolved via the CoAM’s hearing processes. More about this process can be found at: <http://oaa.osu.edu/coam.html>.

Accommodations:

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university’s request process (slds.osu.edu/covid-19-info/covid-related-accommodation-requests/), managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Communication:

Carmen will be used to post some of the materials for the course. CSE 2431 is not an online course, but most course materials will be made available online. Carmen will be used both to post announcements, documents, and host content for the course. Discord will be used as a student discussion platform for the course. Some examples of acceptable topics to discuss include; general information, concepts as related to lecture or assignments, interpretation of assignments, problems with coding such as syntax and execution errors, etc. ***Please do not post answers to homework problems and do not post any code for the programming assignments.*** Carmen and Discord will be monitored by the instructor. Notifications can be set in Account Settings. ***Students are responsible for any announcements/info/content provided on Carmen.*** Additional (supplemental) materials may be provided on Discord.

Counseling and Consultation Services:

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty

concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life Counseling and Consultation Services (CCS) by visiting ccs.osu.edu or calling (614) 292- 5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org.

Diversity and Ethics (*Be kind or be asked to leave.*):

The Ohio State University affirms the importance and value of diversity of people and ideas. We believe in creating equitable research opportunities for all students and to providing programs and curricula that allow our students to understand critical societal challenges from diverse perspectives and aspire to use research to promote sustainable solutions for all. We are committed to maintaining an inclusive community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among all members; and encourages each individual to strive to reach their own potential. The Ohio State University does not discriminate on the basis of age, ancestry, color, disability, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, race, religion, sex, gender, sexual orientation, pregnancy, protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment.

In addition to the above university policy, I declare my belief that every student has the right to a safe learning environment. Our students represent a rich variety of perspectives and backgrounds. I am committed to cultivating a community that is just and one where we can all thrive without barriers. While working together to build this community, we ask all members to share their own unique experiences, values, and beliefs, while respecting and honoring the uniqueness of their colleagues. As such, in my classroom, in addition to the above, I do not discriminate or tolerate discrimination based on any of the following: ability, class, ethnicity, marital status, previous employment, current employment, or sexual misconduct survival. Did I miss something? **Tell me** so I can add it. **Be kind** to one another, or you will be asked to leave.

Harassment, Discrimination, and Sexual Misconduct (*Consent is crucial. Ask when unsure.*):

If you have a problem, I am willing to listen, but I am **not** a confidential resource. Here's more information from the university:

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also

have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at equity.osu.edu,
2. Call 614-247-5838 or TTY 614-688-8605,
3. Or Email equity@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

Important Dates:

- | | |
|---|---|
| ▪ Monday, January 16 th | Martin Luther King, Jr Day - No Classes |
| ▪ Wednesday, February 1 st | Midterm Exam I |
| ▪ Friday, February 3 rd | Last Day to Drop Class Without “W” |
| ▪ Friday, March 10 th | Midterm Exam II |
| ▪ Monday, March 13 - 17 th | Spring Break = No Classes |
| ▪ Wed, Fri, March 22 th , 24 th | Instructor Recovery - Video Classes |
| ▪ Friday, March 24 th | Last Day to Drop Class |
| ▪ Wed, Fri, March 29 th , 31 st | Instructor Recovery - Online Classes |
| ▪ Wed, Fri, April 5 th , 7 th | Instructor Recovery - Online Classes |
| ▪ Friday, April 21 th | Last Day of Classes |
| ▪ Wednesday, April 26 th | 10:00am-11:45am Final Exam |

See Homework and Lab assignments for other due dates.