

CS 540, Operating Systems, Fall 2024

- Instructor: Francisco Javier Rafful Garfias.
- Department: School of Computing
- Office Location: Jabara Hall 241
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- Office Hours: M/W 12:30-1:30 PM in person
- Classroom Day/Time: T/R 02:00 PM-03:15 PM, Jardine Hall 314, in-person
- Prerequisites: ECE238 (C- or better) AND CS311 (C- or better)
- Teaching Assistant: Fadhil Alhamami
- TA Contact: fxalhamami@shockers.wichita.edu

How to use this syllabus

This syllabus provides you with information specific to this course, and it also provides information about important university policies. This document should be viewed as a course overview; it is not a contract and is subject to change as the semester evolves. If any changes are made, a new version will be posted and announced on the class' Blackboard site.

Student Office Hours

My student office hours are listed on page one of the course syllabus. Please utilize this time to meet with me for course-related discussions: asking for extra help, seeking further clarification of material presented in class, and following up on aspects of the class they are interested in. These hours are not required for the course but are available to help support you on your path to success.

Course Description

Fundamental principles of modern operating systems. CPU management includes processes, threads, scheduling, synchronization, resource allocation, and deadlocks. Memory management including paging and virtual memory. Storage management and file systems.

Definition of a Credit Hour

Success in this 3-credit hour course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction and preparation/studying or course-related activities for a total of 135 hours.

Go to [4.08 / Definition and Assignment of Credit Hours](#) for the policy and examples for different types of courses and credit hour offerings.

Measurable Student Learning Outcomes

This course offers the following learning objectives for (undergraduate and graduate) students:

- Describe the basic components and services of an operating system.
- Comprehend CPU and memory virtualization.
- Perform basic thread-based concurrent programming.
- Describe file system organizations and I/O services.

Required Texts/Readings Textbook

(Main Text) Operating System Concepts Essentials, 2nd Edition, ISBN: 978-1118804926.

(Optional) Operating Systems: Three Easy Pieces

<https://pages.cs.wisc.edu/~remzi/OSTEP/>

Other Equipment/Materials

Students are required to have complete access to a functioning laptop or PC with internet capabilities. This laptop or computer must have Microsoft Word and any programming language and development environment to write and run their code. If you do not have Microsoft Word on your PC or Laptop, Wichita State does provide free access to Microsoft Office 365 for students. Follow the instructions below to get Microsoft Office:

1. Log in to [MyWSU](#)
2. Click on Office 365 located on the “Home” tab
3. Follow the Office 365 wizard instructions

Before you begin your coursework, ensure that your computer meets technical standards (software, computer equipment, general skills, program management skills, communication skills, and managing your WSU e-mail) for use in courses:

https://www.wichita.edu/services/mrc/elearning/online_orientation/ComputerSkillsPreparation.php

Class Protocol

This is a university course with commensurate expectations. We expect professional conduct in the classroom. Unprofessional conduct, e.g. topic activities, may affect your grade or even your academic career. Be always respectful. Students demonstrating confrontational, disruptive, or threatening behavior will be asked to leave the classroom immediately and will not be allowed to return to the classroom for the remainder of the class period. Consequences of this behavior may also include (and are not limited to):

Suspension from class for a minimum of one additional class period and report or referral to the WSU police department, Student Conduct, and the WSU Care Team. This class is listed as a TCI 100% In-Person Instruction class, and most class meetings, tests, and other components will be held in class. If needed, we will have it online on Zoom using the link given on Blackboard. To be successful in this class, you should be checking your student email daily and logging in to our course at least 3 times a week.

Contact Policy

Although you may attempt to reach me by email communication is always preferred. Feel free to email me any questions or concerns following these guidelines:

- Always use the course name in the subject line of the email
- Remember to sign your name.
- **Always** email me from your WSU email address. Emails sent from personal email servers like Gmail, Yahoo, etc., have a tendency to end up in my spam folder, and I never see them. You may also email me through Blackboard via the Email My Instructor tab. I also offer an Ask My Instructor forum on Blackboard which allows common questions to be seen and responded to publicly.
- You should NOT contact me for tech support.
 - Any technical problems involving your computer, or issues regarding file uploading or sharing, should go through Blackboard Support. You can contact them at 316-978-3909. You can also fill out a request for help form at their website: <https://wichita.edu/BbSupport>
 - However, if you have a problem with access or uploading assignments, you *should* let me know before your assignment is due. You will also have to accompany this notification with the file in question, so I can verify that it is completed by the due date/time.

Academic Integrity

Students at Wichita State University are expected to uphold high academic standards. WSU will not tolerate a lack of academic integrity. Students are responsible for knowing and following the [Student Academic Integrity Policy 2.17](https://www.wichita.edu/about/policy/ch_02/ch2_17.php) (https://www.wichita.edu/about/policy/ch_02/ch2_17.php).

When the faculty member determines sanctions are warranted for violations of academic integrity, regardless of severity, the faculty member must report the infraction to the Office of Student Conduct and Community Standards. If you need more information about the process or wish to appeal a decision, please visit https://www.wichita.edu/about/student_conduct/ai.php

Please note in particular that *Unauthorized Use or Possession of Materials or Resources* (Policy item IV.B.2) includes unauthorized use of generative AI like ChatGPT or GPT4. In this course, all use of generative AI is prohibited except as may be specified in assignment instructions. Any student suspected of unauthorized use of generative AI may be asked to demonstrate their mastery of the assignment learning

outcomes in an alternate format, such as a verbal interview or an additional problem set, before a determination is made as to whether an academic integrity violation report is warranted.

Sexual Harassment, Discrimination and Retaliation

Wichita State University is committed to creating a safe and healthy environment for all of our community members. To that end, we are partnering with Everfi to provide sexual assault prevention trainings that will help us all be informed on topics vital to achieving our goal. These trainings, in addition to being highly interactive and engaging, are based in research around the best practices for healthy communities. All students, staff and faculty are required to complete these trainings annually. Students will need to [complete Everfi training](#) in the fall semester before being able to enroll for the spring.

We are committed to the elimination of sexual misconduct, relationship violence, and stalking within the University community. These incidents may interfere with or limit an individual's ability to benefit from or fully participate in the University's educational programs. Students are asked to immediately report incidents to the University Police Department, (316) 978-3450 or students may contact the Title IX Coordinator at (316) 978-5177 or submit a report to the Office of Civil Rights, Title IX & ADA Compliance at [Office of Civil Rights, Title IX & ADA Compliance \(CTAC\) Report Form \(maxient.com\)](#).

Students may also report incidents to an instructor, faculty or staff member, who are required by law to notify the Title IX Coordinator. If a student wishes to keep the information confidential, the student may speak with staff members of the Counseling and Psychological Services (316) 978-3440 or Student Health Services (316) 978-3620. For more information please refer to policy [3.06 / Sexual Harassment, Discrimination and Retaliation for Employees, Students and Visitors](#).

Students with Disabilities

A disability is something that affects a major life activity. These life activities include but are not limited to, learning, walking, breathing, hearing, and seeing, in addition to many other physical, sensory functions, and psychological disabilities.

If you are a student with a disability or believe you might have a disability, that requires accommodations, please contact the Office of Disability Services (ODS) at www.wichita.edu/ods to discuss reasonable and appropriate accommodations and eligibility requirements. It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability ODS will review your concerns and determine, with you, what academic accommodations are necessary and appropriate for you. For example, adaptations of teaching methods, class materials, or testing may be made on a case-by-case basis if warranted, as required by the Americans with Disabilities Act (ADA). All information and documentation of your disability is confidential and will not be released by ODS without your permission.

The Office of Disability Services (DS) is located in Grace Wilkie, room 203, (316) 978-3309 (voice/tty) (316-854-3032 videophone). DS will review your concerns and determine, with you, what academic accommodations are necessary and appropriate for you. All information and documentation of your disability is confidential and will not be released by DS without your written permission.

Respect for Diversity

Wichita State University is committed to being an inclusive campus that reflects the evolving diversity of society. To further that goal, Wichita State University does not discriminate in its employment practices, educational programs, or activities based on age (40 years or older), ancestry, color, disability, gender, gender expression, gender identity, genetic information, marital status, national origin, political affiliation, pregnancy, race, religion, sex, sexual orientation, or status as a veteran. Retaliation against an individual filing or cooperating in a complaint process is also prohibited.

Students from all diverse backgrounds and perspectives are welcome in this course and the diversity that students bring to this course should be viewed as a resource, strength, and benefit. All materials and activities are presented with the intent to be respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so we can decide for you.

Complaints or concerns related to alleged discrimination may be directed to the Office of Civil Rights, Title IX & ADA Compliance (CTAC), Wichita State University, telephone 316-978-3187.

Names & Pronouns

Everyone has the right to be addressed as and referred to by the name and pronouns (including non-binary pronouns) that they choose and that correspond to their gender identity. A student's chosen name and pronouns are to be respected at all times in the classroom.

For information about the chosen name, students should visit www.wichita.edu/name. To provide preferred pronouns, click on the "View and Update Personal Information" link in the Student Tools channel on the myWSU Home tab. Use the "Edit" buttons to update information.

Syllabus Policies and Student Resources

All students should familiarize themselves with the course-related policies and student resources that can be found at: **www.wichita.edu/syllabuspolicies**

These include, but may not be limited to:

- Important Academic Dates
- Proctoring exam options: For more information and requirements for using proctoring, please see <https://wichita.edu/onlineproctoring>
- Video and Audio recording
- Shocker Alert System
- Intellectual Property
- CARE Team
- Counseling and Prevention Services
- Student Health Services
- Heskett Center and Campus Recreation
- First Generation Students

Grading Scale

WSU uses a +/- grading scale for final grades and to calculate grade point averages. In this class, grades are assigned according to the following chart. (Other classes might assign grades differently: Be sure to understand the different grading scales in all your classes.)

Points/Percentage	Letter Grade	Grade Points	Interpretation
[93, 100]	A	4.00	Excellent performance
[90, 93)	A-	3.70	
[87, 90)	B+	3.30	
[83, 87)	B	3.00	Good performance
[80, 83)	B-	2.70	
[77, 80)	C+	2.30	
[73, 77)	C	2.00	Satisfactory performance
[70, 73)	C-	1.70	
[67, 70)	D+	1.30	
[63, 67)	D	1.00	Unsatisfactory performance
[60, 63)	D-	0.70	
[0, 60)	F	0.00	

Course Grade Weights:

- Two exams, 25% each, 50% total.
- Three assignments, 11.66% each, 35% total.
- One Short Paper, 15% total.

Missed Assignments and Exams

Makeup for missed exams will be given only when there is a genuine reason (typically medical), with clear proof; it is your responsibility to provide the proof. Whenever possible, you should talk to me before the exam: If you leave a message, you must leave a phone number where you can be contacted, and it is your responsibility to make contact before the exam.

Tentative exam dates

- Midterm exam on 10/10/2024 (Thursday) from 2:00 PM to 3:15 PM.
- Final exam on 12/05/2024 (Thursday) from 2:00 PM to 3:15 PM.

*Both tests will be in-person.

Tentative Schedule

Week 1	Syllabus and Introduction to Operating Systems
Week 2	Operating-System Structures
Week 3	Processes
Week 4	Threads
Week 5	Process Synchronization
Week 6	CPU Scheduling
Week 7	Push and Pop
Week 8	Midterm Review and Midterm Exam
Week 9	Main memory
Week 10	Virtual memory
Week 11	Mass-Storage Systems and File-System Interface
Week 12	File System Implementation and I/O systems
Week 13	Protection and Security
Week 14	Power Management and Emerging Trends
Week 15	Final review
Week 16	Final exam