

# OU 3113 Intro to Operating Systems

## Spring 2023 Syllabus

### 1. Instructor:

Dr. Song Fang ([songf@ou.edu](mailto:songf@ou.edu))

Office hours: Tuesday 4:30 – 6:00 pm, DEH 232

Class meetings: TR 9:00 – 10:15 am, January 17 - May 5, 2023, Nielsen Hall 0170

Final exam: F 8 - 10 am, May 12, 2022, Nielsen Hall 0170

### 2. Teaching Assistant:

Mr. Edwin Yang ([edwiny@ou.edu](mailto:edwiny@ou.edu))

Office hours: Thursday 4:30 – 6:00 pm, DEH 115

### 3. Prerequisites

The prerequisites for this course are CS 2413 - Data Structures and CS 2613 - Computer Organization (or ECE 3223). If you have not taken these courses, you will need instructor permission to take 3113. You are expected to have a working knowledge of C/C++, including familiarity with its basic data types and control structures, and an understanding of computer organization.

### 4. Course Description

An **Operating System** is the layer of software that sits between your application programs and the hardware components that make up your computer. This layer provides an important set of abstractions that make modern computing possible. These abstractions include: files and directories, processes, and reliable communication between processes and between computers.

Successfully learning operating systems means understanding computer science theory, algorithms, data structures, and system-level programming. This operating systems course will include activities to support all of these. As a computer scientist or a computer engineer, this course will be extremely beneficial, but will also be a lot of work. Students should be prepared to spend several hours a week outside of class studying and working on assignments.

### 5. Course Objectives

- Develop an understanding of the principles of operating systems.
- Develop insight into process management and scheduling issues.
- Understand memory management operation.
- Develop an understanding of file system implementation and of multiple levels of hardware support and management.
- Understand the concept of cooperating processes, including communication, synchronization, and deadlock (detection and avoidance).
- Be able to evaluate operating system features.

## 6. Textbook:

Abraham Silberschatz, Peter B. Galvin, and Greg Gagne. *Operating Systems Concepts, Tenth Edition*, Wiley, 2018. ISBN-13: 978-1-119-32091-3.

## 8. Tentative Schedule:

(These will be adjusted based on the actual progress in a semester.)

Week1: Chpt. 1	Course Introduction; OS overview
Week2:	C programming; Unix and Linux history
Week3: Chpt. 2	OS structures; Processes
Week4: Chpt. 3	Inter-process communication
Week5: Chpt. 4	Threads; Multithreading
Week6: Chpt. 5	CPU Scheduling
Week7: Chpt. 6	Synchronization; Semaphores; Critical sections
Week8: Chpt. 7	Monitors; Atomic transactions; <b>Midterm test</b>
<b>Week9: Spring Vacation</b>	<b>N/A</b>
Week10: Chpt. 8	Handling Deadlocks; Deadlock detection and avoidance
Week11: Chpt. 9	Memory management basics; Paging
Week12:	Segmentation
Week13: Chpt. 10	Virtual Memory
Week14:	File management
Week15:	Selected Topics
<b>Final exam:</b> F 8 - 10 am, May 12, 2023, Nielsen Hall 0170	

## 9. Grading:

There will be one midterm exam, counting 20% of the final grade. The comprehensive final will make up 35% of the final grade. There will be multiple (3 or 4) programming projects. The programming projects, homework assignments, and quizzes will count for 45% (25% programming projects, 10% homework assignments, and 10% quizzes) of the final grade.

The graded assignment should be first brought to the person who graded it. Also, all grading questions must be brought to our attention **within one week** of when the item was returned.

**Please note that when an exam/assignment is brought with grading questions, we may examine the entire exam/assignment and your final grade may end up lower.**

Grading scale: The scale for final letter grades is as follows, using standard notation for ranges: A ( $(\infty,90]$ ); B (90,80]; C (80,70]; D (70,60]; F (60,0].

## 10. Policies on Late Assignments:

For each day an assignment is late - up to a maximum of 2 days, the grade is reduced by 15%. For example, if you submit a 90%-correct assignment 2 days late, your overall assignment score will be 60%.

## **11. Policies on Absences and Scheduling Makeup Work:**

There will be no makeup for homework assignments. Make-up exams will not normally be permitted. Exceptions will be made if a student presents a police report or a doctor's note that shows some emergency situation.

## **12. Student Evaluations:**

The College of Engineering utilizes student ratings as one of the bases for evaluating the teaching effectiveness of each of its faculty members. The results of these forms are important data used in the process of awarding tenure, making promotions, and giving salary increases. In addition, the faculty uses these forms to improve their own teaching effectiveness. The original request for the use of these forms came from students, and it is students who eventually benefit most from their use. Please take this task seriously and respond as honestly and precisely as possible, both to the machine-scored items and to the open-ended questions.

## **13. University Policies:**

In this section, include the mandatory University policies.

### **Copyright Syllabus Statement for In-Person or Online Courses**

Sessions of this course may be recorded or live-streamed. These recordings are the intellectual property of the individual faculty member and may not be shared or reproduced without the explicit, written consent of the faculty member. In addition, privacy rights of others such as students, guest lecturers, and providers of copyrighted material displayed in the recording may be of concern. Students may not share any course recordings with individuals not enrolled in the class, or upload them to any other online environment.

### **Academic Integrity**

Academic honesty is incredibly important within this course. Cheating is strictly prohibited at the University of Oklahoma, because it devalues the degree you are working hard to get. As a member of the OU community, it is your responsibility to protect your educational investment by knowing and following the rules. For specific definitions on what constitutes cheating, review the [Student's Guide to Academic Integrity](#).

To be successful in this class, all work on exams and quizzes must be yours and yours alone. You may not receive outside help on assessments. On examinations and quizzes, you will never be permitted to use your notes, textbooks, calculators, or any other study aids. Should you see someone else engaging in this behavior, I encourage you to report it to myself or directly to the Office of Academic Integrity Programs. I encourage this because when someone else cheats, it can negatively impact the reputation of our entire program. It is my professional obligation to report academic misconduct, which I will not hesitate to do. Sanctions for academic misconduct can include expulsion from the University and an F in this course, so don't cheat. It's simply not worth it.

### **Religious Observance**

It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays, without penalty.

[\[See Faculty Handbook 3.15.2\]](#)

### **Reasonable Accommodation Policy**

The Accessibility and Disability Resource Center is committed to supporting students with disabilities to ensure that they are able to enjoy equal access to all components of their education. This includes your academics, housing, and community events. If you are experiencing a disability, a mental/medical health condition that has a significant impact on one or more life functions, you can receive accommodations to provide equal access. Possible disabilities include, but are not limited to, learning disabilities, AD(H)D, mental health, and chronic health. Additionally, we support students with temporary medical conditions (broken wrist, shoulder surgery, etc.) and pregnancy. To discuss potential accommodations, please contact the ADRC at 730 College Avenue, (ph.) 405.325.3852, or [adrc@ou.edu](mailto:adrc@ou.edu).

### **Title IX Resources and Reporting Requirement**

Anyone who has been impacted by gender-based violence, including dating violence, domestic violence, stalking, harassment, and sexual assault, deserves access to resources so that they are supported personally and academically. The University of Oklahoma is committed to offering resources to those impacted, including: speaking with someone confidentially about your options, medical attention, counseling, reporting, academic support, and safety plans. If you would like to speak with someone confidentially, please contact [OU Advocates](#) (available 24/7 at 405-615-0013) or another confidential resource (see [“Can I make an anonymous report?”](#)). You may also choose to report gender-based violence and discrimination through other means, including by contacting the [Institutional Equity Office](#) ([ieo@ou.edu](mailto:ieo@ou.edu), 405-325-3546) or police (911). Because the University of Oklahoma is committed to the safety of you and other students, I, as well as other faculty, Graduate Assistants, and Teaching Assistants, are mandatory reporters. This means that we are obligated to report gender-based violence that has been disclosed to us to the Institutional Equity Office. This includes disclosures that occur in: class discussion, writing assignments, discussion boards, emails and during Student/Office Hours. For more information, please visit the [Institutional Equity Office](#).

### **Adjustments for Pregnancy/Childbirth Related Issues**

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact your professor or the Accessibility and Disability Resource Center at 405/325-3852 as soon as possible. Also, see the Institutional Equity Office [FAQ on Pregnant and Parenting Students' Rights](#) for answers to commonly asked questions.

### **Final Exam Preparation Period**

Pre-finals week will be defined as the seven calendar days before the first day of finals. Faculty may cover new course material throughout this week. For specific provisions of the policy please refer to OU's [Final Exam Preparation Period policy](#).

### **Emergency Protocol**

During an emergency, there are official university [procedures](#) that will maximize your safety.

**Severe Weather:** If you receive an OU Alert to seek refuge or hear a tornado siren that signals severe weather.

1. Look for severe weather refuge location maps located inside most OU buildings near the entrances
2. Seek refuge inside a building. Do not leave one building to seek shelter in another building that you deem safer. If outside, get into the nearest building.
3. Go to the building's severe weather refuge location. If you do not know where that is, go to the lowest level possible and seek refuge in an innermost room. Avoid outside doors and windows.
4. Get in, Get Down, Cover Up
5. Wait for official notice to resume normal activities.

Additional [Weather Safety Information](#) is available through the Department of Campus Safety.

### **Armed Subject/Campus Intruder**

If you receive an OU Alert to shelter-in-place due to an active shooter or armed intruder situation or you hear what you perceive to be gunshots:

1. **Avoid:** If you believe you can get out of the area WITHOUT encountering the armed individual, move quickly towards the nearest building exit, move away from the building, and call 911.
2. **Deny:** If you cannot flee, move to an area that can be locked or barricaded, turn off lights, silence devices, spread out, and formulate a plan of attack if the shooter enters the room.
3. **Defend:** As a last resort fight to defend yourself.

For more information, visit [OU's Emergency Preparedness site](#).

[Shots Fired on Campus Procedure – Video](#)

### **Fire Alarm/General Emergency**

If you receive an OU Alert that there is danger inside or near the building, or the fire alarm inside the building activates: 1. **LEAVE** the building. Do not use the elevators. 2. **KNOW** at least two building exits 3. **ASSIST** those that may need help 4. **PROCEED** to the emergency assembly area 5. **ONCE safely outside, NOTIFY first responders of anyone that may still be inside building due to mobility issues.** 6. **WAIT** for official notice before attempting to re-enter the building.

[OU Fire Safety on Campus](#)

### **Mental Health Support Services**

If you are experiencing any mental health issues that are impacting your academic performance, counseling is available at the University Counseling Center (UCC). The Center is located on the second floor of the Goddard Health Center, at 620 Elm Rm. 201, Norman, OK 73019. To schedule an appointment call (405) 325-2911. For more information, please visit [University Counseling Center](#).

*\*Every part of this syllabus is subject to adjustment as the semester progresses. If you are dissatisfied with the course policies, grading, and assignments, please contact the instructor. Reasonable requests for modifications may be accommodated at the instructor's discretion.*