

CS 316: Introduction to Operating Systems and Computer Networks, Spring 2026

Section 2

Meeting schedule

Mondays, Wednesdays, and Fridays, 10:00-10:50am

Instructor

Dr. Xin Sun,
Computer Science Department,
Ball State University, Muncie, IN

Course Description

Investigation of the basic concepts, models, and application programming interfaces in operating systems and computer networks, with an emphasis on programming software applications that are capable of multitasking and communication over the Internet. Topics include naming and addressing, multi-threading and multi-processing, TCP and UDP socket programming, and the client/server model.

Prerequisites

CS 230 with a minimum grade of C-

Course Objectives

By completing this course, a student will be able to:

- **Describe** the general architecture of an operating system and the layered architecture of the Internet.
- **Describe** the important systems abstractions such as processes, threads, virtual memory, TCP and UDP sockets, etc.; **explain** how these abstractions simplify programming large and networked software systems.
- **Describe** the naming and addressing schemes used on a single computer and on the Internet, such as process IDs, thread IDs, port numbers, IP addresses, hostnames, and domain names; **describe** the DNS mechanism for translating between domain names and IP addresses.
- **Compare** and **contrast** TCP and UDP programming models.
- **Demonstrate** the application of concurrent and parallel programming that utilizes multi-threading, multi-processing, and synchronization primitives.
- **Design** and **implement** client/server application protocols such as online file transfer, remote terminal, Internet time service, etc.

Course Topics

- The purpose, functionality, and architecture of an operating system
- Processes, threads, kernel, and system calls
- Multi-threading and multi-processing
- The critical section problem, synchronization primitives
- The history, organization, and layered architecture of the Internet
- Naming and addressing schemes (port numbers, IP addresses, hostnames, domain names, etc.), DNS
- TCP and UDP socket programming
- The client/server model

Course Materials

Textbook

This course uses two textbooks:

- **Computer Networking: A Top-Down Approach.** Jum Kurose and Keith Ross.
https://gaia.cs.umass.edu/kurose_ross/index.php
- **Operating Systems: Three Easy Pieces.** Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau. <https://pages.cs.wisc.edu/~remzi/OSTEP/>

Computer Requirements

As for all computer science courses, a **laptop computer** is required for this class, either Windows or Mac, which is capable of using modern development tools. Frequently, you will be required to bring your laptop to class.

Software Requirements

The first project uses [Wireshark](#), a free & popular packet capturing and analysis tool.

The other projects are programming projects that use Java; a Java IDE such as [IntelliJ](#) (the free Community version) is highly recommended.

Course Assignments and Assessments

- Five projects: **500** points in total (100 points each)
- Midterm exam: **100** points
- Final exam: **100** points
- Lecture Quizzes and Homework: **100** points in total

Exams

Midterm exam: *Friday, February 27, during regular class time*

Final exam: *Wednesday, April 29, 9:45-10:45am*

Both exams are in person, paper-based, and closed-book.

The final exam is noncumulative.

Lecture Quizzes

We will frequently have quizzes during class time, covering material introduced in the lecture. *Missed lecture quizzes are not excusable.* However, *your lowest two quiz scores will be dropped.*

Assignment details, including instructions, relevant readings, due dates, and grading criteria/rubrics will be posted and updated on Canvas. Please check Canvas regularly to stay informed and on track.

Grading scale

The final letter grade will be determined by the *percentage* of the total points obtained, using the following scheme:

A	93% of the total points obtained, or higher
A-	90%
B+	87%
B	83%
B-	80%
C+	77%
C	73%
C-	70%
D+	67%
D	63%
D-	60%
F	less than 60% of the total points obtained

Late Assignment Policy

You will receive partial credit for submitting work late, on the following scale:

- 90% for work submitted up to 24-hour late
- 75% for work submitted up to one-week late
- 0% for work submitted more than one-week late (such submissions will *not* be accepted or graded)
- Non-penalty extensions will be given to students who are unable to complete an assignment due to valid reasons (you must let the instructor know *before* the assignment due date).

Make-up Exam Policy

In order to be eligible to take a make-up exam, you must contact the instructor *before* the exam.

University Policies and Statements

University Statement

We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse.

Disability Statement

If you need course adaptations or accommodations because of a disability, please contact the instructor of record as soon as possible. Ball State's [Disability Services Office](#) coordinates services for students with disabilities; documentation of a disability needs to be on file in that office before any accommodations can be provided. Disability Services can be contacted at 765-285-5293 or dsd@bsu.edu.

Freedom of Expression

In this course, we are committed to fostering a learning environment that values intellectual diversity, encourages free expression, and promotes open inquiry. As members of the Ball State Community, we treat each person in the Ball State community with civility, courtesy, compassion, and dignity and respect and learn from differences in people, ideas, and opinions. Please review Ball State University's [Statement on Freedom of Expression](#), the resources on Ball State's [Freedom of Expression webpage](#), and [Ball State's Beneficence Pledge](#).

Attendance

The course is structured around weekly activities, quizzes, projects, and other assignments to help you build a strong understanding of the course material over time. The best way to succeed is to come prepared for each class and actively participate in activities, so attendance at each session is expected. If you miss a class meeting, you should consult with trusted classmates to ensure you are caught up. You are responsible for your learning regardless of attendance.

Ball State Academic Ethics Policy

Honesty, trust, and personal responsibility are fundamental attributes of the university community. Academic dishonesty and other forms of academic misconduct threaten the foundation of an institution dedicated to the pursuit of knowledge and will not be tolerated. To maintain its credibility and reputation, and to equitably assign evaluations of scholastic and creative performance, Ball State University is committed to maintaining a climate that upholds and values the highest standards of academic integrity. Visit the VPAA's [academic integrity website](#) (Students tab) for resources on understanding academic integrity, citing sources properly, and avoiding inadvertent academic dishonesty. To learn about BSU's academic integrity expectations and students' rights, please read the University [Student Academic Ethics Policy](#).

Academic integrity violations include giving or receiving an unfair academic advantage (cheating), presenting someone else's ideas or work as your own (plagiarism), and falsifying academic records. Unless otherwise indicated, you must work independently by yourself. Check with me if you are unsure whether something constitutes academic dishonesty. Examples of academic integrity violations include but are not limited to:

- Using resources not authorized by the faculty member (including devices, AI tools, hidden notes, and open books)
- Using commercial study websites to find answers to graded assignments (Chegg, Course Hero, StudyPool, OneClass, etc.).
- Without the instructor's written permission, giving away, buying, or selling graded assignments class notes, exams, study guides, or other course materials to

other students or to third-party vendors (Course Hero, Chegg, 24HourAnswers, etc.).

- Working with another person on any assignment other than authorized group projects.
- Sharing or allowing others to access your files, whether done with permission or not.
- Reusing your own work from another semester, course, or section.
- Sharing answers with others during exams (passing notes, texting, whispering, gesturing)
- Discussing exam questions and answers with students who have not taken the exam.
- Soliciting others to complete work for you.

Generative AI Statement

You may use generative AI applications for some work submitted in this course. You will be informed as to when, where, and how these tools are permitted to be used, along with guidance for attribution. Any use outside of this permission constitutes a violation of Ball State University's [Student Academic Ethics Policy](#).

Title IX

Ball State University is committed to providing a safe and inclusive learning environment for all students. If you or someone you know has experienced sexual harassment—including sexual assault, dating violence, domestic violence, or stalking, please know that you are not alone. The University offers support services and resources. For more information or to report an incident, please visit www.bsu.edu/titleix or contact the Title IX Coordinator at 765-285-1545 or at titleix@bsu.edu.

As your instructor, I am a mandatory reporter under the Title IX policy and required to report any information I receive about possible sexual harassment. This includes information shared in class discussions, assignments, or private conversations.

What happens after I report? The Title IX Coordinator will email the person who experienced sexual harassment (complainant) and invite them to schedule a meeting. If the complainant chooses to meet with the Title IX Coordinator,

- Title IX Coordinator will offer supportive measures (e.g., counseling, extensions on deadlines, course-related adjustments, changes to work or class schedules, and/or referrals to campus offices), review the policy, and discuss options to move forward.
- If a complaint is filed by the complainant or the University, an investigation will begin following University policy.

University Grade Appeal Policy

If you believe you received a final course grade that does not reflect your performance due to fairness or a procedural issue, you have the right to file an appeal within 5 school days after final grades are posted by the Office of the Registrar. Review the [University Grade Appeal Policy and Process](#).