

# **Course Syllabus - Fall B 2024**

## **CSE 531: Distributed and Multiprocessor Operating Systems**

### **Course Description**

This course will teach both the fundamental concepts and principles of distributed systems and the practical skills for developing distributed systems. To start, this course provides an initial exploration of distributed systems and their design goals and types of systems. We address the architectures of distributed systems, including centralized and decentralized architectures, and important real-world examples of distributed systems that are built following these architectures. With interprocess communication at the heart of all distributed systems, a concentrated focus will be on a strong series of communication and coordination. To conclude, we take a detailed look at what consistency of replicated data actually means and the various ways that consistency can be achieved.

Specific topics covered include:

- Architecture
- Communication
- Coordination
- Consistency and replication

Technologies covered include:

- gRPC

### **Learning Outcomes**

Learners completing this course will be able to:

- Apply the fundamental concepts and principles to analyze distributed and multiprocessor operating systems.

CSE 531 Syllabus  
Fall B 2024

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- Utilize the basic approaches and techniques to develop distributed and multiprocessor operating systems.

## **Estimated Workload/ Time Commitment Per Week**

Average of 18 - 20 hours per week

## **Required Prior Knowledge and Skills**

This course will be very challenging, and learners are expected to learn the necessary technologies on their own time.

## **Proficient Mathematical Skills and Theoretical Understanding**

- Algebra
- Linear Algebra
- Algorithms
- Data Structures
- Computer Organization and Architecture
- Operating Systems
- Computer networking

## **Strong Application Skills**

- Python
- Java
- C#
- C++

## **Proficient Experience**

- Experience reading technical specifications and documentation.
- Experience with virtual machine software: creating, configuring, and running virtual machines.
- Experience with Linux operating systems: installing, running, and using Linux operating systems.

CSE 531 Syllabus

Fall B 2024

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## Course Access

Your ASU courses can be accessed by both [my.asu.edu](https://my.asu.edu) and [asu.instructure.com](https://asu.instructure.com) bookmark both in the event that one site is down.

## Technology Requirements

### Proctoring

- [Honorlock Minimum System Requirements](#)

### Hardware

- Standard personal computer with major operating system
  - **Must be able to install virtual machines on this computer**
- Reliable, strong Internet connection
- Webcam
- Microphone

### Software/Other

- Virtual machine software such as VirtualBox
- Linux Operating System such as Ubuntu
- Python 3.5 or higher with pip 9.0.1 or higher

## Technology Recommendations

- To complete coursework, these applications/languages are strongly recommended:
  - Python 3

## Textbook and Readings

At the graduate level, inquiry, research, and critical reading are part of the learning experience; however, this course does not have a required textbook.

CSE 531 Syllabus  
Fall B 2024

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For interested learners, the faculty course designer recommends the text:

M. van Steen and A. S. Tanenbaum, *Distributed Systems*, 4th ed., [distributed-systems.net](https://distributed-systems.net), 2017.

## Course Schedule and Important Dates

Course teams will not be working on ASU's days off\* and those are listed in the Course Schedule. Please review the [ASU Days Off](#) for more details.

Module: Title	Begins at 12:01 AM Arizona (AZ) Time	Ends at 11:59 PM Arizona (AZ) Time
Orientation and Onboarding Review You must complete required tasks in the Orientation and Onboarding Review for Module 0: Welcome and Start Here to be unlocked.	October 10	October 13
Module 0: Welcome and Start Here You must complete required tasks in Module 0: Welcome and Start Here for the rest of the course to be unlocked.	October 10	October 15
Module 1: Introduction to Distributed and Multiprocessor Operating Systems	October 16	October 20
Module 2: Architecture	October 21	October 27
Module 3: Communication and Coordination Part 1	October 28	November 3
Module 4: Communication and Coordination Part 2	November 4	November 10
Exam 1	November 10	November 17
Module 5: Communication and Coordination Part 3	November 11	November 17

### CSE 531 Syllabus Fall B 2024

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*ASU Day Off: Monday, November 11, 2024		
Module 6: Consistency and Replication Part 1	November 18	November 24
Deadline to Submit gRPC Project and Logical Clock Project		November 24
Course Evaluation You may also refer to ASU's Office of <a href="#">Evaluation and Educational Effectiveness (UOEEO)</a> for dates.	This will be updated in your course.	This will be updated in your course.
Module 7: Consistency and Replication Part 2  *ASU Days Off: Thursday–Friday, November 28–29, 2024	November 25	December 1
Deadline to Submit Client-Centric Consistency Project		December 1
Exam 2	December 1	December 8
Request for Faculty Review: MCS Portfolio Project Report Inclusion Request Optional, degree-seeking learner degree requirement  If you submit by the first deadline and it is not accepted, you are encouraged to review the feedback and re-submit it a second time by the last submission deadline. Anything submitted past the last submission deadline will <b>not</b> be reviewed for approval in your portfolio to meet your degree requirements. You will have to repeat this process for another course and a project from that course.	December 9	First submission deadline by: December 20  Last submission deadline (if necessary) by December 30
Faculty Feedback for the Review: MCS Portfolio Project Report Inclusion Request  Optional, degree-seeking learner degree requirement	December 21	January 13

## CSE 531 Syllabus

### Fall B 2024

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<p><b>Course Closes</b></p> <p>Past this date, Ed Discussion will no longer be monitored. Please download copies of what you would like from the course (e.g., Request for Faculty Review: MCS Portfolio Project Report Inclusion Request).</p>		<p>January 27</p>
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Grades are due Monday, December 16, 2024. Please see the [ASU Academic Calendar](#) for additional information.

## Late or Missed Coursework

When possible, kindly notify the instructor before a coursework deadline by creating a private thread in Ed.

If an urgent situation or emergency arises and you are unable to submit the assignment on time, please send the instructor a private thread on Ed as soon as you are able to.

Follow the appropriate University policies to request an [accommodation for religious practices](#) or to accommodate a missed assignment [due to University-sanctioned activities](#).

## Coursework Due Dates and Late Penalties

Unless otherwise noted, all coursework is due on **Sundays at 11:59 PM Arizona (AZ) time**. Due dates in your course are set up in Arizona Standard time. Use a [Time Converter](#) to ensure you account for the difference in time zones and remember to update your course settings to reflect your time zone (see your onboarding course for directions). Arizona does **not** observe daylight savings time.

Review specific due dates directly in your course. For learners with accommodations through [Student Accessibility and Inclusive Learning Services \(SAILS\)](#) and/or the [Pat Tillman Veterans Center \(PTVC\)](#), please work with your SAILS consultant and/or PTVC Advocacy Team, Connect, and your instructor.

This course has **two (2)** designated deadlines to submit graded coursework. These deadlines mean graded coursework submitted after the specified dates, will not be evaluated and result in a grade of

CSE 531 Syllabus  
Fall B 2024

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zero (0) points. Please review the Course Schedule and Important Dates section, and take note of which coursework is associated with which deadline.

## Projects

No late penalty is applied after the scheduled due date and time, but in order to complete all work by the final submission deadlines, it is highly recommended to follow the course schedule.

- **gRPC Project**
- **Logical Clock Project**
- **Client-Centric Consistency Project**

## Exams

An automatic late penalty of 100% is applied after the scheduled due date and time.

- **Exam 1**
- **Exam 2**

## Course Content

Each course in the MCS program is uniquely designed by expert faculty, so learners can best master the learning outcomes. As a result, course features and experiences are not the same across all MCS courses. Learners are expected to plan accordingly to accommodate for these differences.

## Content and Assessment Details

If you have specific questions related to instructional and assessment items in this course that you would like to be considered to be addressed in the Zoom meeting hosted by the instructor, please clearly indicate your request in your Ed Discussion thread.

For details regarding how points are earned in different types of assessments, please refer to your onboarding courses.

CSE 531 Syllabus  
Fall B 2024

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## **PlayPosit Lecture Playlists**

The course content is presented through a collection of Playposit Playlists embedded in each module. Playposit is a video platform that prompts interaction and note-taking while viewing course content. The playlists launch automatically and you can playback the course content by selecting the video titles in the playlist. The videos can be rewatched, but playlist videos cannot be downloaded. The playlist pages will include the downloadable video transcripts and any applicable supplementary material. Other course materials that accompany the lectures will be found in the media guides.

A media guide is included at the beginning of each module in the Overview section. These guides are designed to give you a snapshot description of each module's media components and to provide PDF lecture slides or note-taking materials where available, so you can plan your learning and quickly go back and review material as you prepare for your coursework.

## **Playposit Interactions: In-Video Questions**

Playposit provides opportunities for interaction and reflection as you learn the course content. During lecture videos, there are interactions referred to as in-video questions. Interactions are designed to support your learning, highlight specific content, encourage active viewing and/or note-taking and provide practice opportunities. They are untimed, ungraded learning opportunities to test your knowledge of the concepts presented during the lecture videos. You may retake these as often as you would like at any point in the course.

You can toggle the clipboard icon on the left of the screen and select a review to see all the questions. You are accountable for this information as it may be assessed in different ways in other graded coursework.

There are no late penalties. Interactions are not counted toward your final grade in the class.

## **Study Guides**

Downloadable, fillable study guides are provided in each module for you to take notes while viewing the lecture videos. The questions in the study guides are meant to guide your thinking and to help you learn content and prepare for assessments. They are untimed, ungraded learning opportunities to review your understanding of some of the main concepts presented in the lecture videos. Sample answers are also provided as a resource that you can use to check your own answers and deepen your understanding of the content in the lectures.

CSE 531 Syllabus

Fall B 2024

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There are no late penalties. Study guides are not counted toward your final grade in the class.

## **Discussions**

### **Ed Discussion**

Ed Discussion (Ed) is being used in place of Canvas Discussion Forums. The purpose of Ed Discussion is to provide a place for learners to ask questions and receive answers from course staff and peers about course content and coursework. The course team is engaged in discussions, but it is also a space to clarify, support, and enrich learner-to-learner communication and learning. There are designated categories for course items. You must select a category and subcategory to start a thread.

Discussions in Ed are designed to provide:

- Clarification
- Feedback
- Enrichment and deeper learning
- Connections between concepts or key ideas
- Reflection opportunities of real-world experiences
- Respectful debate and perspective building
- Resource sharing
- Networking

There are no late penalties. Ed is not counted toward your final grade in the course.

### **Designated Project Discussion in Ed Discussion**

Use Ed to discuss items relating to the course projects. Questions/Threads should be categorized by their designated title in Ed. Please check for questions already asked and answered, or marked as resolved.

There are no late penalties. Responses in Ed are not counted toward your final grade in the course.

## **Individual Projects**

This course includes three (3) individual projects. All project overview documents and materials are provided in the Welcome and Start Here section of your course, so you can preview what is expected and design your own learning schedules to complete these on time. Review the "Request for Faculty Review: MCS Portfolio Project Report Inclusion Request" section of this syllabus for what can be

CSE 531 Syllabus

Fall B 2024

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used from this course to potentially meet the degree portfolio requirement, which is optional and for degree-seeking learners only.

There are no late penalties associated with the projects. These projects count toward your final grade in the class.

## **Gradescope**

All projects for this course will use Gradescope. You must complete and then submit your code in Gradescope. Carefully review submission directions outlined in the project overview documents in order to correctly earn credit.

## **Request for Faculty Review: MCS Portfolio Project Report Inclusion Request**

This is an optional task for degree students wanting to use this course's project(s) as part of their portfolio degree requirement/specialization requirements. Review your onboarding course and the Welcome and Start Here section of your course for more details. The submission space is towards the end of the course.

Your Request for Faculty Review: MCS Portfolio Project Report Inclusion Request will be evaluated only if the criteria is met (see your MCS Handbook for more details):

- Your course is designated as a portfolio eligible course
- You address the designated project(s), which equal 30% or more of your overall course grade
- Your final course letter grade of a B\* or higher

\*Degree-seeking students with course letter grades that are lower than a B will **not** have their submissions reviewed.

Although there are no late penalties, these requests must be submitted by the designated deadline. The Request for Faculty Review: MCS Portfolio Project Report Inclusion Request does not count toward your final grade in the class.

Address these projects in your Request for Faculty Review: MCS Portfolio Project Report Inclusion Request:

- gRPC Project
- Logical Clock Project

CSE 531 Syllabus  
Fall B 2024

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- Client-Centric Project

## Practice Exams

In order to help you prepare for your proctored exams, you will have practice exams. Since they are intended to be practice opportunities and to help you learn, you have unlimited attempts and they are untimed, ungraded, and include feedback.

You may engage with your peers in Ed Discussion to address questions, share resources and strategies, and provide feedback to help one another learn. You are encouraged to read the feedback, review your answer choices, and compare them to the correct answers. You are encouraged to submit questions in Ed Discussion for the course team to address during Zoom Events and/or Zoom Support Sessions. Use the feedback to guide your learning and to study for the proctored exam.

There are no late penalties. Practice exams are **not** counted toward your final grade in the class.

## Proctored Exams

You have two (2) proctored exams. These consist of Exam 1 and Exam 2. Proctored exams do **not** include feedback. Read the Graded Quiz and Exam Policy for your course for more information.

No late exams will be permitted or accepted and will result in a score of zero (0) points. This does **not** include established accommodations for learners receiving accommodations through [Student Accessibility and Inclusive Learning Services \(SAILS\)](#) and and/or the [Pat Tillman Veterans Center \(PTVC\)](#).

Proctored exams count toward your final grade in the class.

Exam Details	Exam 1	Exam 2
<b>Content Covered</b>	Modules 1, 2, 3, and 4	Modules 5, 6, and 7
<b>Question Type</b> <b>Grading Note:</b> For multiple choice questions with multiple correct answers, you earn credit for each	Multiple-choice questions with a single correct answer	Multiple-choice questions with a single correct answer

CSE 531 Syllabus  
Fall B 2024

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correct answer option selected; however, credit is automatically deducted for each incorrect answer option selected. You cannot earn less than zero (0) for any question. If no answer option is selected, you will earn zero (0) points for no attempt, so it is best to provide an answer to every question.	Multiple-choice questions with multiple correct answers	Multiple-choice questions with multiple correct answers
<b>Number of Questions</b>	26 total questions  (25 content questions + 1 academic integrity question)	26 total questions  (25 content questions + 1 academic integrity question)
<b>Availability Start</b>	Sunday, November 10, 2024 at 12:01 AM AZ Time	Sunday, December 1, 2024 at 12:01 AM AZ Time
<b>Availability End</b>	Sunday, November 17, 2024 at 11:59 PM AZ Time	Sunday, December 8, 2024 at 11:59 PM AZ Time
<b>Scheduling Reminder</b> In order to have enough time to complete the exam, you should start your exam no later than the listed date and time to ensure you have enough time to complete it before the due date.	Sunday, November 17, 2024 at 9:01 PM AZ Time	Sunday, December 8, 2024 at 9:01 PM AZ Time
<b>Duration</b>	120 minutes + plan for at least 15 minutes for proctoring set up	120 minutes + plan for at least 15 minutes for proctoring set up

## Proctoring

Learners needing allowance accommodations need to work through the [Student Accessibility and Inclusive Learning Services \(SAILS\)](#) and/or the [Pat Tillman Veterans Center \(PTVC\)](#).

CSE 531 Syllabus  
Fall B 2024

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## Honorlock

Honorlock will proctor your exams this session. Honorlock is an online proctoring service. You do **not** need to create an account or schedule an appointment in advance. Honorlock is available twenty-four hours a day and seven days a week (24 hours/7 days).

Honorlock will be enabled for at least one practice assessment in your course to prepare you for the proctored exams in this course.

Review your onboarding course and the Welcome and Start Here section in your course for more information about Honorlock and how to download the required Chrome Extension.

## Exam 1 and Exam 2 Allowances

Any items **not** included in this list are **not** allowed during the exam or in your exam space.

### Reminders

- You are to independently take your exams in a single session. Once you open your exam, your testing session begins and you will need to complete it within the allotted time. Your exam will automatically be submitted if it is **not** completed before the deadline. You will be allowed one (1) attempt to take and complete your exams.
- You are to independently take the exam in a single session without leaving the testing space (e.g., no bathroom breaks) to ensure proctoring of the entire session.
- You are to stay within a clear view of the webcam throughout the duration of the proctored exam session.
- Before the exam concludes and the proctoring session ends, all scratch paper must be destroyed and all whiteboard markings must be erased.
- The last question in the exam will be a confirmation of you upholding ASU academic integrity.

### Specific Allowances

- **Site URLs:** None
- **Open book:** No

CSE 531 Syllabus

Fall B 2024

Any information in this syllabus may be subject to change without advance notice. Stay informed by checking course announcements and the syllabus section of your course.

- **Pre-written paper notes:** None
- **Scratch paper:** Yes
  - Unlimited amount of blank scratch paper of any size, writing utensils (e.g., pens, pencils, markers, and/or highlighters) and erasers; please have extra ones in your testing area should you run out of ink, the pencil breaks, etc.
  - Before the exam concludes and the proctoring session ends, all scratch paper must be destroyed and all whiteboard markings must be erased. The last question in the exam will be a confirmation of learners executing these ASU academic integrity actions.
- **On-Screen Calculator:** None
- **Handheld calculator:** None
- **Restroom breaks:** No
- **Copy and Paste:** No
- **Hats:** No
- **Headphones:** No
- **Take Exam in a Public Area:** No
- **Mobile Phone Use:** No
- **Background Noise (Occasional sounds expected in the testing area):** No

## Course Grade Breakdown

Course Work	Quantity	Team or Individual	Points
gRPC Project*	1	Individual	200
Logical Clock Project*	1	Individual	200
Client-Centric Project*	1	Individual	200
Exam 1	1	Individual	200

CSE 531 Syllabus  
Fall B 2024

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<b>Exam 2</b>	1	Individual	200
<b>Total Course Points</b>			1000

\*The project(s) count for 30% or more of the overall course grade, so this is a portfolio eligible course. See the [MCS Graduate Handbook](#) for more information about the portfolio requirement if you are a degree student.

## Grade Scale

You must earn a cumulative grade of 70% to earn a “C” in this course. You must earn at least a “C” to receive graduate credit. This course has no grade curving. All graded coursework will be included to calculate grades (i.e., no graded items will be dropped). Grades will **not** be rounded. Grades in this course will include pluses.

The instructor reserves the right to adjust individual grades based on, but not limited to: violations of academic integrity.

Range of Points	Percentage	Letter Grade
970 - 1000	97 - 100	<b>A+</b>
900 - 969.99	90 - 96.99	<b>A</b>
870 - 899.99	87 - 89.99	<b>B+</b>
800 - 869.99	80 - 86.99	<b>B</b>
770 - 799.99	77 - 79.99	<b>C+</b>
700 - 769.99	70 - 76.99	<b>C</b>
600 - 699.99	60 - 69.99	<b>D</b>

### CSE 531 Syllabus Fall B 2024

Any information in this syllabus may be subject to change without advance notice. Stay informed by checking course announcements and the syllabus section of your course.

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## Zoom Meetings

This course has three (3) types of Zoom meetings:

- **Instructor Zoom Events:** If you have specific questions or topics of interest to be discussed, please indicate your request in an Ed Discussion thread. Although it may not be possible to address all requests during the Zoom event, the instructor is interested in tailoring this time to your questions and interests. The instructor will be following a set agenda, so please be mindful of that when engaging in the Zoom event.
- **Instructional Assistant (IA) Zoom Support Sessions:** These sessions offer a chance for learners to get their questions answered from the IAs. Although the course team is responsive to trends in Ed Discussion, these events focus on addressing learners' specific questions related to content: clarifications, reteaching, assessment preparation, etc.
- **Grader Zoom Support Sessions:** These sessions are singularly focused on addressing questions related to **grading**.

Check the Zoom tab in the navigation menu of your course. Although we try to be consistent for our learners' planning purposes, the schedule is subject to change throughout the course, so stay up-to-date on the event details by checking your Ed and course announcements.

Read about the specific policies related to Zoom meetings directly in your onboarding course and your course pages: Syllabus, ASU Course Policies, and any additional course-specific policy information in the Welcome and Start Here area. Additional information may be included in the Policies section of this syllabus. You are responsible for adhering to all policies.

## Zoom Recordings

- Instructor Zoom Events are **recorded and shared** through the "Zoom" navigation link in your course. These can be found by going to the "Cloud Recordings" tab. These recordings will be unavailable after 120 days.
- IA Zoom Support Sessions are **recorded**, but **not uploaded** into the course. It is at the discretion of the instructor if these sessions will be shared during the course session.
- Grader Zoom Support Sessions are **recorded**, but **not uploaded** into the course.

CSE 531 Syllabus  
Fall B 2024

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## Policies

Please refer to the ASU Course Policies section in your course, your onboarding course, and the Welcome and Start Here section of your course in addition to the policies listed in this section.

## Code of Conduct

The aim of education is the intellectual, personal, social, and ethical development of the individual. The educational process is ideally conducted in an environment that encourages reasoned discourse, intellectual honesty, openness to constructive change, and respect for the rights of all individuals. Self-discipline and a respect for the rights of others in the university community are necessary for the fulfillment of such goals. The [Student Code of Conduct](#) is designed to promote this environment at Arizona State University.

The [Student Code of Conduct](#) sets forth the standards of conduct expected of students who choose to join the university community. Students who violate these standards will be subject to disciplinary sanctions in order to promote their own personal development, to protect the university community, and to maintain order and stability on campus.

Students are expected to follow the [ABOR Student Code of Conduct](#) and the ASU [Student Code of Conduct](#) at all times.

## Expected Behavior

Students are expected to follow the ASU [Student Code of Conduct](#) and are expected to acknowledge and embrace the [FSE Student Professionalism Expectation](#).

An instructor may withdraw a student from a course with a mark of “W” or “E” or employ other interventions when the student’s behavior disrupts the educational process. For more information, review [SSM 201–10](#).

If you identify something as unacceptable classroom behavior (e.g., in Canvas, Ed Discussion, Zoom, etc.), please notify the course team.

CSE 531 Syllabus  
Fall B 2024

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Our classroom community rules are to:

- Be professional
- Be positive
- Be polite
- Be proactive

## Academic Integrity

All engineering students are expected to adhere to the ASU Student [Honor Code](#) and the ASU academic integrity policy, which can be found at <https://provost.asu.edu/academic-integrity/policy>. Students are responsible for reviewing this policy and understanding each of the areas in which academic dishonesty can occur. If you have taken this course before, you may not reuse or submit any part of your previous assignments without the express written permission from the instructor.

All student academic integrity violations are reported to the Fulton Schools of Engineering Academic Integrity Office (AIO). Withdrawing from this course will not absolve you of responsibility for an academic integrity violation and any sanctions that are applied. The AIO maintains a record of all violations and has access to academic integrity violations committed in all other ASU college/schools.

## No Generative AI Use Permitted

In this course, all assignments must be completed by the student. Artificial Intelligence (AI), including ChatGPT and other related tools used for creating of text, images, computer code, audio, or other media, are not permitted for use in any work in this class. Use of these generative AI tools will be considered a violation of the [ASU Academic Integrity Policy](#), and students may be sanctioned for confirmed, non-allowable use in this course.

## Copyright

You must refrain from uploading to any course shell, discussion board, or website used by the course instructor or other course forum, material that is not the student's/learner's original work, unless the student/learner first complies with all applicable copyright laws; faculty members reserve the right to delete materials on the grounds of suspected copyright infringement.

CSE 531 Syllabus  
Fall B 2024

Any information in this syllabus may be subject to change without advance notice. Stay informed by checking course announcements and the syllabus section of your course.

The contents of this course, including lectures (Zoom recorded lectures included) and other instructional materials, are copyrighted materials. Students may not share outside the class, including uploading, selling or distributing course content or notes taken during the conduct of the course. Any recording of class sessions is authorized only for the use of students enrolled in this course during their enrollment in this course. Recordings and excerpts of recordings may not be distributed to others (see [ACD 304-06](#), “Commercial Note Taking Services” and [ABOR Policy 5-308 F.14](#) for more information).

## Exam Policy

Each course in the MCS program is uniquely designed by expert faculty so that learners can best master the learning outcomes specific to each course. By design, course features and experiences are different across all MCS courses.

In the MCS program, we strive to provide learners with exercises and applied practice beyond quizzes and exams that align with the hands-on nature of the computer science industry. Ungraded practice opportunities may include, but are not limited to: in-video-questions (IVQs), knowledge check quizzes (KCs), module practice quizzes, practice exams, and other coursework. When available, the questions and correct answers are provided to learners. Depending on the type of questions, auto-generated feedback is built into the course to further help learners learn in real-time. Please thoroughly review your course to ensure that you are aware of the types of practice opportunities available to you.

For academic integrity purposes, once grades are made available, learners will see their overall total scores. Like other standardized tests, such as the GRE and SAT, learners will receive a singular grade for the graded quizzes and exams, but the questions, correct and incorrect answers, and feedback to each question will **not** be provided.

If learners desire 1:1 feedback, please send a private thread to the course team on Ed and/or attend a Zoom meeting with the course team. Rather than receiving the exact questions learners had correct and incorrect and the answers to those questions, learners will likely receive the concepts that were covered in the assessment questions so they will know what they need to review prior to other assessments and how to apply this information in their professional environments.

### CSE 531 Syllabus Fall B 2024

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## Absence Policies

There are no required or mandatory attendance events in this online course. Different types of Zoom meetings hosted by any course team member do not take attendance.

Excused absences do not relieve students of responsibility for any part of the coursework required during the period of absence. If exceptions for graded coursework deadlines need to be made for known excused absences, please reach out to the course team by the end of the second week of the course by sending a private thread to the course team on Ed. Review availability windows and due dates for coursework and schedule accordingly. The exam availability windows allow for your own flexibility and you are expected to plan ahead.

Review the resources for what qualifies as an excused absence and review the late penalties in the Assignment Deadlines and Late Penalties section of the syllabus and the course:

- a. Excused absences related to religious observances/practices that are in accord with [ACD 304–04](#), “Accommodation for Religious Practices” (please see [Religious Holidays and Observances](#)).
- b. Excused absences related to university sanctioned events/activities that are in accord with [ACD 304–02](#), “Missed Classes Due to University-Sanctioned Activities”.
- c. Excused absences related to missed class due to military line-of-duty activities that are in accord with [ACD 304–11](#), “Missed Class Due to Military Line-of-Duty Activities,” and [SSM 201–18](#), “Accommodating Active Duty Military”.

## Zoom Meetings

### Recording Notice

Instructors will record Zoom meetings. An archived recording will be made available in Canvas for enrolled students, instructors, or support personnel. Creation of recordings for individuals or groups beyond these requires consent from students who are recorded.

### Expectations

The environment should remain professional at all times. Inappropriate content/visuals, language, tone, feedback, etc. will not be tolerated, reported and subject to disciplinary action. Review the policy

CSE 531 Syllabus  
Fall B 2024

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regarding Expected Behavior section of the syllabus, ASU [Student Code of Conduct](#), and [FSE Student Professionalism Expectation](#) for more detailed information.

## **Policy Against Threatening Behavior, per the Student Services Manual, (SSM 104-02)**

Students, faculty, staff, and other individuals do not have an unqualified right of access to university grounds, property, or services (see [SSM 104-02](#)). Interfering with the peaceful conduct of university-related business or activities or remaining on campus grounds after a request to leave may be considered a crime. All incidents and allegations of violent or threatening conduct by an ASU student (whether on- or off-campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students.

## **Disability Accommodations**

Suitable accommodations are made for students with disabilities. Students needing accommodations must register with [ASU Student Accessibility and Inclusive Learning Services](#) (SAILS) office. Students should communicate the need for an accommodation at the beginning of each course so there is sufficient time for it to be properly arranged. These requests should be submitted through the [online portal](#). See [ACD 304-08](#) Classroom and Testing Accommodations for Students with Disabilities. SAILS will send the instructor a notification of accommodations. It is recommended that students communicate with instructors regarding documented accommodations.

## **Harassment and Sexual Discrimination**

Arizona State University is committed to providing an environment free of discrimination, harassment, or retaliation for the entire university community, including all students, faculty members, staff employees, and guests. ASU expressly prohibits discrimination, harassment, and retaliation by employees, students, contractors, or agents of the university based on any protected status: race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, and genetic information.

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is

CSE 531 Syllabus  
Fall B 2024

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prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/faqs>.

As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, <https://eoss.asu.edu/counseling> is available if you wish to discuss any concerns confidentially and privately. ASU online students may access 360 Life Services, <https://goto.asuonline.asu.edu/success/online-resources.html>.

## Photo Requirement

Arizona State University requires each enrolled student and university employee to have on file with ASU a current photo that meets ASU's requirements (your "Photo"). ASU uses your Photo to identify you, as necessary, to provide you educational and related services as an enrolled student at ASU. If you do not have an acceptable Photo on file with ASU, or if you do not consent to the use of your photo, access to ASU resources, including access to course material or grades (online or in person) may be negatively affected, withheld or denied.

## Course Creator



### Ming Zhao, PhD

Ming Zhao, Ph.D. is an associate professor at Arizona State University (ASU) in the School of Computing and Augmented Intelligence (SCAI). Before joining ASU, he was an associate professor of the School of Computing and Information Sciences (SCIS) at Florida International University. He directs the Research Laboratory for Virtualized Infrastructure, Systems, and Applications (VISA, <http://visa.lab.asu.edu>). His research is in the areas of experimental computer systems, including cloud/edge, big data/AI, and high-performance systems as well as operating systems and storage in general. Dr. Zhao is a recipient of NSF CAREER award, Air Force Summer Faculty Fellowship, VMware Faculty Award, AWS Machine Learning Research Award, and the Best Paper Award of the IEEE International Conference on Autonomic Computing. His research outcomes have been adopted by several production systems.

### CSE 531 Syllabus Fall B 2024

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