Grand Valley State University
College of Computing
CIS 656 – Distributed Systems, Fall 2025

Instructor Information
Instructor: Xiang Cao
Email: caox@gvsu.edu
Office Hours:
- Wednesday: 4:30pm – 6:00pm (DEV-297C and online via Zoom)
- Thursday: 4:30pm - 6:00pm (DCIH-575 and online via Zoom)

Course Information
Format: Multiple Delivery [In Person (DEV 119E): Wednesday 6:00pm – 8:50pm; Synchronous Online: Wednesday 6:00pm – 8:50pm; and Asynchronous Online]

Course Description
Fundamental principles of distributed systems: systems and software architectures, virtualization, code migration, threading, RPC, message-oriented middleware, multicast, distributed naming systems, DHTs, clock synchronization, logical clocks, consistency and replication, overview of distributed Web technologies, fault tolerance and security considerations. Exposure to current research topics in distributed systems, and hands-on experience building distributed systems.

Course Objectives
After successful completion of the course, students will be able to…
1. Evaluate inter-process communication mechanisms.
2. Design and develop multi-threaded / multi-process applications.
3. Explain the primary challenges and tradeoffs in designing distributed systems.
4. Create prototype systems that explore possible solutions to those challenges.

Prerequisite
Admission to M.S.-ACS or MS-cybersecurity and CIS 511

Course Material
- Distributed Systems, by VAN STEEN, MAARTEN AND TANENBAUM, ANDREW, 2017 (Recommended)

Grading
Programming Assignments	40%
Midterm Exam	30%
Final Exam	30%

Grading Scale

| A [94-100] | A- [90-94) | B+ [87-90) | B [84-87) | B- [80-84) | C+ [77-80) |
| C [74-77) | C- [70-74) | D+ [65-70) | D [60-65) | F: below 60 | |

Course Policies

This course is subject to the GVSU policies listed at http://www.gvsu.edu/coursepolicies

- All programming assignments and exams, unless otherwise specified by the instructor, are to be completed individually. All students are expected to adhere to the academic honesty standards set forth by Grand Valley State University. In addition, students in this course are expected to adhere to the academic honesty guidelines as set forth by the College of Computing. The details can be found at https://www.gvsu.edu/computing/academic-honesty-93

- Students must be able to correctly answer questions asked by the instructor about their programming code, when they demonstrate their programming assignments in-person or online synchronously. Otherwise, some points will be lost and deducted. If students cannot demonstrate their programming assignments in-person or online synchronously, a video covering the correct result and all aspects of the programming assignment must be provided.

- Programming assignments require additional time to finish outside of class. Since some of them build on each other, it is very important to complete the entire programming assignments by the indicated due date.

- Any programming assignment is considered **late** if you turn it in past the due time on the due date set by the instructor. Late programming assignments will **NOT** be accepted unless there is an adequate reason behind why it wasn't turned in on time, and the student must notify the instructor **before the deadline** of the programming assignment.

- The instructor reserves the right to modify course policies, the course schedule, assignment point values and due dates.

- Class sessions including students' voices, text chats and/or images/videos are recorded by the instructor. Those recordings will only be available to students in the same class section. Students may not share any recording with anyone outside their class section. Without the instructor's prior permission, students may not record class sessions.

- The student is responsible for ALL material covered and announcements made in class on any day that he or she is absent as well as those made on the course web page. **Students should also check their emails and Blackboard (https://lms.gvsu.edu/) regularly to receive the announcements of the course.**

- If students have any questions about grades of programming assignments and midterm exam, they must notify the instructor within certain days specified by the instructor from when the grade is posted online. For the final exam, students should notify the instructor within **48 hours** after the grade is posted online, if they have any questions. After that period, regrading will not be considered.

- Make-up exams are in general not given. A make-up exam will be considered only when a provably serious family or personal emergency arises, and proof is presented. Also, the student must notify the instructor **before the exam**.

- F-1 and J-1 International Students who are enrolled in one or more Multiple Delivery (MD) courses or one MD course along with an online course in a standard semester must submit the Multiple Delivery Attestation form to confirm that they will attend the necessary MD

course at least 25% in-person for the duration of the semester. 25% attendance in-person is approximately 4 weeks of in-person meetings in a standard Fall/Winter semester. When attending this way, the course is considered in-person for immigration purposes. Fully online participation in MD courses does not meet immigration requirements when a student is taking the MD course in combination with other MD courses or online courses.

Special Needs

Let me know if you have special needs because of a disability and contact Disability Support Recourses (DSR) at 616-331-2490.

In Case of Emergency

Fire: Immediately proceed to the nearest exit during a fire alarm. Do not use elevators. More information is available on the University's Emergency website located at gvsu.edu/emergency

Important Dates

- Midterm Exam: Wednesday, October 15, Asynchronous Online (A 24-48 hour time window will be given)
- Thanksgiving Break: Nov 26 - Nov 30 (no class)
- Final Exam: Wednesday, December 10, Asynchronous Online (A 24-48 hour time window will be given)