

CSCI 4431 / 6431 Computer Networks Syllabus

Course and contact information:

Course: **CSCI 4431 / 6431 Computer Networks**

Semester: Fall 2026

Meeting time: Wednesdays 3:30-6pm

Location: PHL B156

Instructor:

Name: Timothy Wood

Campus address: SEH 4580

Phone: 202-994-1918

GW E-mail: timwood@gwu.edu

Remote office hours: TBD

Course prerequisites:

CSCI 4431 requires CSCI 2113

CSCI 6431 is open to CS Graduate Students

The course assumes basic python programming knowledge

Learning outcomes:

By the end of this course, you will be able to:

- Explain core networking concepts, including the distinction between packet-switched and circuit-switched networks
- Describe the layered model of network architecture and the role of each layer in the OSI and TCP/IP models
- Compare standard application-layer protocols (HTTP, SMTP, DNS) and transport-layer protocols (TCP, UDP)
- Write basic client-server applications using the sockets API
- Explain how congestion control and flow control regulate traffic across a network
- Describe how IP addressing, routing, and supporting protocols such as ICMP move packets between networks
- Compare link-layer protocols for wired Ethernet and wireless networks
- Identify common network security threats and the mechanisms used to defend against them

Average amount of direct instruction or guided interaction with the instructor and average minimum amount of independent (out-of-class) learning expected per week:

Over 15 weeks, students will spend 2.5 hours per week in lecture and discussion (37.5 hours per semester). Homework and other out-of-class work is estimated at around 6 hours per week (90 hours per semester) which includes preparation for a 2-hour midterm exam and a 2 hour final exam.

Textbook:

The course is based on the book *Computer Networking, A Top-Down Approach*, 9th Ed, James F. Kurose and Leith W. Ross, Pearson Education, 2025. A digital copy can be purchased from [pearson.com](https://www.pearson.com)

Students are recommended to purchase a copy.

Schedule of Topics:

Week 1 2026-08-26	Chapter 1: Networking Overview	Quiz
Week 2 2026-09-02	Chapter 2: Application Layer	Quiz
Week 3 2026-09-09	Chapter 2: Application Layer	Lab
Week 4 2026-09-16	Chapter 3: The Transport Layer	Quiz Project 1 Begins
Week 5 2026-09-23	Chapter 3: The Transport Layer	Quiz Lab
Week 6 2026-09-30	Guest Lecture, Exam Review	
Week 7 2026-10-07	Midterm Exam	
Week 8 2026-10-14	Chapter 4: The Network Layer - Data Plane	Quiz

Week 9 2026-10-21	Chapter 4: The Network Layer - Data Plane	Quiz Lab Project 1 Due
Week 10 2026-10-28	Chapter 5: The Network Layer - Control Plane	Project 2 Begins Quiz
Week 11 2026-11-04	Chapter 5: The Network Layer - Control Plane	Quiz Lab
Week 12 2026-11-11	Chapter 6: The Link Layer	Quiz
Week 13 2026-11-18	Chapter 7: Wireless and Mobile Networks	Quiz
Week 14 2026-11-25	NO CLASS	Quiz
Week 15 2026-12-02	Chapter 8: Network Security	Project 2 Due
Finals Week	Exam 2, date TBD	

Assignments

Assignment	Description	Total Points
Weekly Quizzes	"Low stakes" evaluation of weekly material, also tracking attendance	10x10 =100

Labs	~4 lab exercises	4x25 =100
Project 1	Define and implement an <i>application layer</i> protocol	100
Project 2	Define and implement a <i>transport layer</i> protocol	150
	Total Possible Points	450

Grading

List what will be counted and percentages. [For example:

- Quizzes / participation - 10%
- Labs - 10%
- Project 1 - 10%
- Project 2 – 15%
- Exam 1 - 25%
- Exam 2 - 30%

University Policies

Academic Integrity Code

Academic integrity is an essential part of the educational process, and all members of the GW community take these matters very seriously. As the instructor of record for this course, my role is to provide clear expectations and uphold them in all assessments. Violations of academic integrity occur when students fail to cite research sources properly, engage in unauthorized collaboration, falsify data, and otherwise violate the [Code of Academic Integrity](#). If you have any questions about whether particular academic practices or resources are permitted, you should ask me for clarification. If you are reported for an academic integrity violation, you should contact Conflict Education and Student Accountability (CESA), formerly known as Student Rights and Responsibilities (SRR), to learn more about your rights and options in the process. Consequences can range from failure of assignment to expulsion from the University and may include a transcript notation. For more information, refer to the CESA website at students.gwu.edu/code-academic-integrity or contact CESA by email cesa@gwu.edu or phone 202-994-6757.

University Policy on Observance of Religious Holidays

Students must notify faculty during the first week of the semester in which they are enrolled in the course, or as early as possible, but no later than three weeks prior to the absence, of their intention to be absent from class on their day(s) of religious observance. If the holiday

falls within the first three weeks of class, the student must inform faculty in the first week of the semester. For details and policy, see provost.gwu.edu/policies-procedures-and-guidelines.

Use of Electronic Course Materials and Class Recordings

Students are encouraged to use electronic course materials, including recorded class sessions, for private personal use in connection with their academic program of study. Electronic course materials and recorded class sessions should not be shared or used for non-course related purposes unless express permission has been granted by the instructor. Students who impermissibly share any electronic course materials are subject to discipline under the Student Code of Conduct. Contact the instructor if you have questions regarding what constitutes permissible or impermissible use of electronic course materials and/or recorded class sessions. Contact Disability Support Services at disabilitysupport.gwu.edu if you have questions or need assistance in accessing electronic course materials.

Academic support

Academic Commons

[Academic Commons](https://academiccommons.gwu.edu) is the central location for academic support resources for GW students. To schedule a peer tutoring session for a variety of courses visit go.gwu.edu/tutoring. Visit academiccommons.gwu.edu for study skills tips, finding help with research, and connecting with other campus resources. For questions email academiccommons@gwu.edu.

GW Writing Center

GW Writing Center cultivates confident writers in the University community by facilitating collaborative, critical, and inclusive conversations at all stages of the writing process. Working alongside peer mentors, writers develop strategies to write independently in academic and public settings. Appointments can be booked online at <https://writingcenter.gwu.edu>.

Support For Students in and Outside the Classroom

Disability Support Services (DSS) 202-994-8250

Any student who may need an accommodation based on the potential impact of a disability should contact Disability Support Services at disabilitysupport.gwu.edu to establish eligibility and to coordinate reasonable accommodation.

Student Health Center 202-994-5300, 24/7

The Student Health Center (SHC) offers [medical](#), [counseling/psychological](#), and [psychiatric](#) services to GW students. More information about the SHC is available

at healthcenter.gwu.edu. Students experiencing a medical or mental health emergency on campus should contact GW Emergency Services at 202-994-6111, or off campus at 911.

GW Campus Emergency Information

GW Emergency Services: 202-994-6111

For situation-specific instructions, refer to [GW's Emergency Procedures guide](#).

GW Alert

GW Alert is an emergency notification system that sends alerts to the GW community. GW requests students, faculty, and staff maintain current contact information by logging on to alert.gwu.edu. Alerts are sent via email, text, social media, and other means, including the Guardian app. The Guardian app is a safety app that allows you to communicate quickly with GW Emergency Services, 911, and other resources. Learn more at safety.gwu.edu.

Protective Actions

GW prescribes four protective actions that can be issued by university officials depending on the type of emergency. All GW community members are expected to follow directions according to the specified protective action. The protective actions are Shelter, Evacuate, Secure, and Lockdown (details below). Learn more at safety.gwu.edu/gw-standard-emergency-statuses.

Shelter

- Protection from a specific hazard
- The hazard could be a tornado, earthquake, hazardous material spill, or other environmental emergency.
- Specific safety guidance will be shared on a case-by-case basis.

Action:

- Follow safety guidance for the hazard.

Evacuate

- Need to move people from one location to another.
- Students and staff should be prepared to follow specific instructions given by first responders and University officials.

Action:

- Evacuate to a designated location.

- Leave belongings behind.
- Follow additional instructions from first responders.

Secure

- Threat or hazard outside of buildings or around campus.
- Increased security, secured building perimeter, increased situational awareness, and restricted access to entry doors.

Action:

- Go inside and stay inside.
- Activities inside may continue.

Lockdown

- Threat or hazard with the potential to impact individuals inside buildings.
- Room-based protocol that requires locking interior doors, turning off lights, and staying out of sight of corridor window.

Action:

- Locks, lights, out of sight
- Consider Run, Hide, Fight

Classroom Emergency Lockdown Buttons

Some classrooms have been equipped with classroom emergency lockdown buttons. If the button is pushed, GWorld Card access to the room will be disabled, and GW Dispatch will be alerted. The door must be manually closed if it is not closed when the button is pushed. Anyone in the classroom will be able to exit, but no one will be able to get in.