Syllabus for Fall 2025 CS 432/532: Introduction to Computer Networks

Jun Li
Department of Computer Science
University of Oregon
lijun@cs.uoregon.edu

November 4, 2025

1 Course Information

- Prerequisites: CS 330. CS 415 recommended.

- Instructor: Prof. Jun Li (`lijun@cs.uoregon.edu`)

- Teaching GE: Nate Balmain (`balmain@uoregon.edu`)

2 Course Description

This course introduces the fundamental principles, design, and implementation of computer networks. We will focus on the design philosophies of networking, individual functionalities and their relationship, and key implementation technologies. Using a top-down approach focusing on the Internet, this course covers topics including application protocols, transport protocols, congestion control, Internet protocol, routing algorithms and protocols, and link layer protocols.

3 Expected Learning Outcomes

Upon successful completion of the course, students will be able to:

- Understand the fundamental principles, concepts, design, and implementation of computer networks, as exemplified by the Internet.

- Become familiar with popular applications and protocols at different layers of the Internet.

- Design and program networking applications to meet basic needs and requirements.

4 Acquired Skills

Upon successful completion of the course, students will have acquired the following skills:

- be able to describe and reason the design principles, methods, and protocols of computer networking at different layers of the Internet.

- be able to solve computer networking problems related to network performance, applications (e.g., web, email), reliability, congestion control, routing, etc.

- be able to design and program networking applications with moderate complexity.

5 Course Materials

- **Textbook:** *Computer Networking: A Top-Down Approach*, by James F. Kurose and Keith W. Ross. 9/E. Published by Pearson (July 10, 2025) © 2026.

  eTextbook ISBN-13: 9780135415603 Link: `https://www.pearson.com/en-us/subject-catalog/p/computer-networking-a-top-down-approach/P200000013385/9780135415603`

  Paperback ISBN-13: 9780135429334

- **Alternative Textbook 1:** *Computer Networking: A Top-Down Approach*, by James F. Kurose and Keith W. Ross. 8/E. Pearson, ISBN-10: 0136681557; ISBN-13: 978-0136681557. `https://media.pearsoncmg.com/ph/esm/ecs_kurose_compnetwork_8/cw/`

- **Alternative Textbook 2:** *Computer Networking: A Top-Down Approach*, by James F. Kurose and Keith W. Ross. Seventh Edition. Pearson, ISBN-10: 0133594149; ISBN-13: 978-0133594140.

- **Slides:** Class slides will be provided on Canvas.

6 Scheduling

- Class time: T R 8:30-9:50; no class on 11/27 (Thanksgiving)

- Class location: Lillis Hall (LIL) 112

- Office hours (Jun): Tuesdays 10-11 AM; Deschutes 362

- Teaching GE office hours: Wednesday 12-1 PM and Thursdays 12:30-1:30 PM; Deschutes 224

- Three tests after finishing chapters 2, 3, 5, respectively.

  - Test 1: **October 23**
  - Test 2: **November 6**
  - Test 3: **November 25**

- Final: **December 8, Monday, 8:00 AM − 10:00 AM**, 112 LIL

7 Lectures (tentative)

8 Grading Policy

- CS 432:

  | Class participation 5% | Homework 15% | Program 20% | Tests 30% | Final 30% |

- CS 532:

  | Class participation 5% | Homework 10% | Program 20% | Tests 30% | Final 30% |
  | Paper Review 5% |

- Grading rubric:

A+ = 96.67-100%	A = 93.34-96.66%	A- = 90.0-93.33%
B+ = 86.67-89.99%	B = 83.34-86.66%	B- = 80.0-83.33%
C+ = 76.67-79.99%	C = 73.34-76.66%	C- = 70.0-73.33%
D+ = 66.67-69.99%	D = 63.34-66.66%	D- = 60.0-63.33%
F = 0-59.99%		

  A Excellent. Solid grasp of concepts, approaches, and/or programming skills introduced or used in this course. Very well prepared to apply this knowledge to future studies or employment.

  B Very good. Generally good grasp of concepts, approaches, and/or programming skills introduced or used in this course. Prepared to apply this knowledge to future studies or employment.

Week#	Chapters (8/E)	Coverage	What's Due
1	1.1	syllabus; intro: Internet; Internet edge & core	
1	1.2–1.3	intro: performance; security	
2	1.4–1.5	intro: protocol layers; history	
2	2.1–2.2	application layer: intro; Web	
3	2.2–2.3	application layer: Web (cont'd); Email; DNS	
3	2.4–2.5	application layer: P2P; CDN; socket programming	
4	3.1–3.3	transport layer: intro; multiplexing; UDP	HW 1; PR 1 (532)
4	3.4–3.5	transport layer: reliability; TCP	**Test 1**;
5	3.6–3.7	transport layer: congestion control	
5	4.1–4.2	network layer: overview; What's inside a router	HW 2; PR 2 (532) Prog. 1 (10/31)
6	4.3–4.4	network layer: Internet protocol; SDN	**Test 2**
6	5.1–5.2	network layer: routing algorithms	HW 3
7	5.3–5.4	network layer: OSPF; BGP	
7	5.5–5.7	network layer: SDN; ICMP; SNMP	
8	6.1–6.2	link layer: intro; link error handling	HW 4; PR 3 (532)
8	6.3–6.4	link layer: multiple access; LAN	**Test 3**
9	6.5–6.7	link layer: MPLS; data center networking	Prog. 2
9		THANKSGIVING HOLIDAY	
10		wireless: intro; CDMA; WiFi	HW 5
10		wireless: Cellular, mobility	
11		FINAL EXAM (12/8, 8:00 AM)	

C Pass. Basic grasp of concepts, approaches, and/or programming skills introduced or used in this course. Minimally prepared to apply this knowledge to future studies or employment.

D No Pass (Earns UO credit). Demonstrated grasp of concepts, approaches, and/or programming skills introduced or used in this course is not yet sufficient to apply this knowledge to future studies or employment.

F No Pass (No credit). Little or no demonstrated grasp of concepts, approaches, and/or programming skills introduced or used in this course, and/or failure to carry out much of the required work.

A+ Distinction. A+ grades will be given only in cases where the student has excelled in all course topics and overall performance is distinctly better than that required for an A grade.

9   Student Workload

The workload of this course is expected to be as follows.

- **Class participation**.

  - Students should actively participate in the class including raising questions and being involved in discussions. A pop quiz may be given at the beginning or toward the end of the class.

- **Course review and homework**. Students should carefully review the class materials after the class. There will be 5 homework throughout the term.

- **Programming assignment**. The class will have a moderate amount of programming assignment. The student will be allowed to use a language they are familiar with to write their programs, but they must compile and run in the specified testing environment.

- **Paper Reviews (CS 532 only)**. Students in 532 will need to read 3-5 papers on networking and write a review about each of them. A template will be given for your review.

- **Tests and Exams**. There will be three tests throughout the term and one final exam.

10 Course Policies

Outside Classroom Communication

We will use Canvas to post course materials, post and collect assignments, and support discussions. We encourage everyone to get in touch with the professor and teaching GE of this class when you have questions. Do not postpone your questions until the last couple weeks of the term. You should fully exploit the office hours!

Your email subject should begin with **CS 432:** or **CS 532:** to help email filtering.

GenAI Use

Students may NOT use GenAI tools to produce homework assignments, paper reviews, or programs in whole or in part.

Students may use GenAI tools to help debug their programs, revise their paper reviews. In this case, students can also provide their work prior to AI to receive extra credits.

Students may use GenAI as a private tutor to help them review course materials.

Barriers and Accommodations

Our goal is a fully inclusive class, accessible to everyone. If you encounter or anticipate barriers to full participation and fair evaluation for any reason, please communicate your needs to the instructor so that we can find a suitable accommodation. If you encounter or observe other impediments to full participation, for yourself or others, please share your concerns with the instructor. You are also encouraged to contact the Accessible Education Center in 360 Oregon Hall at 541-346-1155 or `uoaec@uoregon.edu`. It is particularly important that you inform the instructor in the first week of the quarter if you require accommodation.

Academic Honesty

The University Student Conduct Code (available at `conduct.uoregon.edu`) defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. Students should properly acknowledge and document all sources of information (e.g., quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the student's obligation to clarify the question with the instructor before committing to attempting to commit the act.

All work turned in for the course must be your own work. Copying from other class members or other sources (except for provided materials) is not acceptable. If you collaborate with someone else on an assignment, you must indicate such on the work you turn in. Collaboration that is not explicitly credited is plagiarism.

Academic honesty is expected and cases of suspected dishonesty will be handled according to university policy. In particular, copying someone else's work (including material found on the web) will not be tolerated. If solutions to assignments are obtained from outside sources, the source must be cited.

You are also responsible for protecting your work. That is, you must take reasonable precautions to prevent your work from being copied. This means that if you store your assignment solutions on a shared server, the file permissions must be set to keep others from accessing your files. If you are working on assignments on a shared machine, you must remove any of your files from the machine before you leave.

Turning in someone else's code is collusion, and is a particularly heinous form of plagiarism; if collusion is detected, all individuals involved (i.e., the copyee and all copyers) will be given a grade of F in the course.

Academic Disruption due to Campus Emergency

In the event of a campus emergency that disrupts academic activities, course requirements, deadlines, and grading percentages are subject to change. Information about changes in this course will be communicated as soon as possible by email and on Canvas. If we are not able to meet face-to-face, students should immediately log onto Canvas and read any announcements and/or access alternative assignments. Students are also encouraged to continue the readings and other assignments as outlined in this syllabus or subsequent versions of the syllabus.

Prohibited Discrimination and Harassment Reporting

Students experiencing any form of prohibited discrimination or harassment, including sex or gender-based violence, may seek information and resources at `safe.uoregon.edu`, `respect.uoregon.edu`, or `investigations.uoregon.edu`, or contact the non-confidential Title IX office/Office of Civil Rights Compliance (541-346-3123), or Dean of Students offices (541-346-3216), or call the 24-7 hotline 541-346-SAFE for help.