



CS 456 Networks and Communication

Summer 2024

Course Credits: 4

Contact Hours: 56 hours

Instructor: TBA

Email: TBA

COURSE OBJECTIVES

This course takes a deep dive into computer networks and communications, using a systems approach to deconstruct hardware, protocols, and their interactions. Network concepts, transmission, architecture, routers, wireless networks, and emerging technologies are among the topics discussed. Learn specific skills for navigating and innovating in the changing world of computer networks.

Upon Completion of this Course, students will be able to:

1. Learn important networking protocols for smooth data transmission and effective network administration.
2. Gain proficiency in designing and securing wireless networks, adapting to emerging technologies and ensuring seamless connectivity.
3. Cultivate the ability to devise and implement innovative solutions for complex technological challenges within computer networks.
4. Learn techniques for optimizing data transmission, ensuring efficient and reliable communication in diverse network architectures.

PREREQUISITES

CS 258 Data Structures and Algorithms, CS 360 Advanced Data Structures and Algorithms

GRADING

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:



ITEM	POINTS
Quizzes	20 Points
Assignments	20 Points
Midterm	15 Points
Project	15 Points
Final Exam	30 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

$$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F.$$

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

James F. Kurose, Keith Ross, *Computer Networking: A Top-Down Approach*, 8th Edition, Pearson, 2022.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	Topics: Topic 1: Computer Networks and the Internet Topic 2: A Nuts-and-Bolts Description of internet Topic 3: Application Layer Topic 4: Network Application Architectures Assessments: Quiz#1
Module 2	Topics: Topic 5: Transport Layer Topic 6: Principles of Reliable Data Transfer Topic 7: Evolution of transport-layer functionality Topic 8: Network Service Models



	<p>Assessments: Quiz#2 Assignment#1</p>
Module 3	<p>Topics: Topic 9: Routing Algorithms Topic 10: Routing Policy Topic 11: ICMP: The Internet Control Message Protocol Topic 12: The Simple Network Management Protocol (SNMP)</p> <p>Assessments: Midterm Project</p>
Module 4	<p>Topics: Topic 13: Multiple Access Links and Protocols Topic 14: Switched Local Area Networks Topic 15: Wireless Links and Network Characteristics Topic 16: Wireless LANs</p> <p>Assessments: Assignment#2 Project due</p>
Module 5	<p>Topics: Topic 17: LTE Radio Access Network Topic 18: Direct and Indirect Routing to/from a Mobile Device Topic 19: Security in Computer Networks Topic 20: Operational Security: Firewalls and Intrusion Detection Systems</p> <p>Assessments: Final Exam</p>

ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed



the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

- 1) Late assignments are not acceptable and are subjected to grade deductions.
- 2) Assignments submitted in the wrong format will be counted as not submitted.
- 3) Failure to submit or fulfill any required course component results in failure of the class.
- 4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
- 5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

ACADEMIC INTEGRITY POLICY

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.

DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for



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access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.