



蘇州大學  
Soochow University

# CS 374 Data Communications and Computer

## Network

Summer 2024

**Course Credits:** 4

**Contact Hours:** 56 hours

**Instructor:** TBA

**Email:**TBA

### COURSE OBJECTIVES

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This course covers computer networking, transmission systems, and delves into the physical layer with topics like Fourier analysis, signal impairments, and information theory basics. Additionally, students explore data link layer protocols, multiplexing, medium access control, error control, and flow/congestion control algorithms. The network layer is examined in detail, including circuit vs. packet switching, ATM, and routing algorithms. Students also gain insight into internet architectures, LAN, and Wireless LAN technologies.

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

1. Describe the theoretical concept and emerging technologies of data communication and networking;
2. Display the good values in the completion of individual and group tasks of data communication and networking assignment;
3. Discuss the requirement of the current trends and changes technologies of Data Communication and networking field to society;
4. Describe Delay and loss in Packet-Switched Networks;
5. Mathematically and logically analyze how computer protocols work in the abstract.

### PREREQUISITES

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MAT 204 Introduction to Probability



## GRADING

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

ITEM	POINTS
2 Labs	20 Points
Midterm 1	15 Points
Midterm 2	15 Points
2 Reports	20 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:**

Behrouz A. Forouzan, *Data Communications and Networking*, 2nd Edition, McGraw-Hill Education, 2001.

### **Recommended (Optional) Texts or Other Materials:**

None

## COURSE TOPICS

MODULE	TASKS
Module 1	<b>Topics:</b> Topic 1: Overview of Data Communications and Networking Topic 2: Introduction to Computer Networks Topic 3: Network Models and Layered Architecture Topic 4: Physical Layer: Signals, Transmission Media, and Encoding <b>Assessments:</b>



	Lab 1
Module 2	<b>Topics:</b> Topic 5: Data Link Layer: Error Detection and Correction, Framing, and Flow Control Topic 6: Medium Access Control Protocols Topic 7: Network Layer: Addressing, Routing, and IPv4/IPv6 Topic 8: Introduction to Internet Protocols: TCP/IP Suite <b>Assessments:</b> Report 1
Module 3	<b>Topics:</b> Topic 9: Transport Layer: UDP and TCP Protocols Topic 10: Application Layer Protocols: HTTP, FTP, SMTP, DNS, etc. Topic 11: Wireless Networking Technologies: Wi-Fi, Bluetooth, and Cellular Networks Topic 12: Introduction to Network Security: Cryptography and Authentication <b>Assessments:</b> Midterm#1
Module 4	<b>Topics:</b> Topic 13: Network Management and SNMP Protocol Topic 14: Multimedia Networking: Quality of Service (QoS) and Streaming Topic 15: Introduction to Data Center Networking Topic 16: Wide Area Networks (WANs) and VPN Technologies <b>Assessments:</b> Midterm#2 Lab 2 Report 2
Module 5	<b>Topics:</b> Topic 17: Network Virtualization and Software-Defined Networking (SDN) Topic 18: Cloud Computing and Networking Topic 19: Internet of Things (IoT) and Networking Challenges Topic 20: Future Trends in Data Communications and Networking <b>Assessments:</b> Final Exam

## 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.



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## **DISABILITY ACCOMMODATION**

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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 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.