



蘇州大學
Soochow University

CS 510 Advanced Network Security

Summer 2024

Course Credits: 4

Contact Hours: 56 hours

Instructor: TBA

Email: TBA

COURSE OBJECTIVES

This course provides an in-depth exploration of essential principles, technologies, and best practices in network security. Students will gain comprehensive knowledge of the core concepts surrounding network attacks, defenses, and practical security applications. Emphasis is placed on critical elements of network security, including encryption, authentication, access control, firewalls, secure data transactions, and security protocols. The course aims to equip students with the skills needed to design, implement, and maintain secure solutions in network environments.

Upon completion of this course, students will be able to:

1. Understand fundamental concepts and principles of network security.
2. Analyze risks associated with network threats, vulnerabilities, and attacks.
3. Deploy and configure effective authentication and access control measures.
4. Implement encryption techniques to ensure data confidentiality and integrity.
5. Utilize intrusion detection systems (IDS) and intrusion prevention systems (IPS) for network defense.
6. Evaluate and enhance network security policies in compliance with regulations and best practices.

PREREQUISITES

CS 220 Introduction to Computing System

GRADING

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



ITEM	POINTS
2 Assignments	20 Points
2 Quizzes	20 Points
Midterm Exam	30 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:

Charlie Kaufman, Radia Perlman, Mike Speciner, *Network Security: Private Communication in a Public World*, 2002, Prentice Hall

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	Topics: Topic 1: Network Security Fundamentals Topic 2: Threat Models and Attack Types Topic 3: Psychology and Strategies of Attackers Topic 4: Security Policies and Planning Assessments: Assignment # 1
Module 2	Topics: Topic 5: Encryption and Data Protection Topic 6: Authentication and Access Control Topic 7: User Authentication Methods Topic 8: Access Control Fundamentals Assessments: Quiz # 1



Module 3	Topics: Topic 9: Access Control Fundamentals Topic 10: Intrusion Detection Systems (IDS) and Intrusion Prevention Systems (IPS) Topic 11: Network Security Hardware Devices Topic 12: Network Protocols and Security Assessments: Midterm Exam
Module 4	Topics: Topic 13: Secure Sockets Layer (SSL) and Transport Layer Security (TLS) Topic 14: Virtual Private Networks (VPNs) Topic 15: Secure Data Transactions Topic 16: Design Prototyping and Testing Assessments: Assignment # 2
Module 5	Topics: Topic 17: Network Security Strategy and Management Topic 18: Security Awareness Training Topic 19: Simulated Network Attacks and Incident Response Topic 20: Emerging Trends and Technologies (IoT, Blockchain Technology and Network Security) Assessments: Quiz # 2 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 (e.g., 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 access to and/or participation in this course are welcome.



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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.