

CS6262 Syllabus

Network Security, QSA and QSZ, 3.0

Sections QSA and QSZ, Summer and Fall 2026

Instructor Information

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General Course Information

Description

This is a graduate-level course in network security. It teaches the concepts, principles, and techniques to secure networks. The main topics include:

1. Large-scale attacks and impacts: DDoS attacks, malware-based underground economy
2. Penetration testing and security measures: basic techniques and tools, social engineering, and human factors
3. Security of Internet protocols: vulnerabilities of TCP/IP, BGP security, and DNS cache poisoning and DNSSEC
4. Advanced web security: browser security models, session management, and goals and pitfalls of HTTPS
5. Advanced malware analysis: malware obfuscation, mobile malware
6. Advanced network monitoring: botnet detection systems
7. Internet-scale threat analysis: mapping the Internet, domain/network reputation
8. Bitcoins and cryptocurrencies: basic concepts of blockchain and bitcoins, emerging technologies
9. Big data and security: applying machine learning to security analytics, and security of data analysis - data poisoning and model evasion

10. Cloud security: virtual-machine security, goals and pitfalls of property-preserving encryption, oblivious RAM
11. Attack-tolerant systems: secret-sharing, Byzantine fault-tolerant systems, diversification, and moving-target defense

Course Learning Outcomes

Upon successful completion of this course, you should be able to understand the basic concepts, principles, and fundamental approaches to securing network protocols, infrastructures, and applications.

Required Course Materials

PowerPoint slides of the lectures will be made available.

Grading Policy:

Your final grade will be assigned as a letter grade according to the following scale:

A	90-108%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

Assignments

- 5 projects, 1 extra credit project, for a total of 83 points
- 10 quizzes, for a total of 10 points
- 1 extra credit exam, for 5 points
- 1 exam for 10 points

Description of Graded Components

Your projects must be submitted to Gradescope and be graded according to the requirements specified in the project assignments.

Course Policies

Attendance and/or Participation

You are expected to study all the lecture materials and attend most of the lectures and office hours.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review [Georgia Tech's Honor Code](#) and the student [Code of Conduct](#).

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Core IMPACTS

[Core IMPACTS](#) is the University System of Georgia's General Education curriculum. If you are teaching a course that counts towards Core IMPACTS, you should include a syllabus statement about the Core area and associated [career competencies](#). [This resource](#) developed by the Center for Excellence in Teaching and Learning and Online Education at Georgia State University includes template syllabus statements for each of the Core IMPACTS areas that you may adapt for your course.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, [contact the Office of Disability Services](#) (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. [The Student-Faculty Expectations](#) articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.