Intro Infor Security

Course Information

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Course Prefix and Number: CS 3235
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Course Description

A survey of the fundamentals of information security. Terms/concepts for threats; controls; problem definition; comprehensive information security model; security for operating systems, databases, network/distributed systems; administering security

Course Learning Outcomes

Students will come out of this course with a broad understanding of information security, focusing on software security, network security, web security, cryptography, and privacy technologies, as well as how these security issues can impact real world systems. This includes a broad understanding of thinking adversarially, software security, operating systems security, access control, authentication mechanisms, network security, privacy preserving protocols and anonymity, web security, cryptography and its applications, TLS, side channels, and ethics in computer security.

Required Course Materials

No textbooks or materials are required.

Communication Email

Please send all emails to gtinfosec-staff@cc.gatech.edu.

Office Hours

We try to hold Office Hours on every weekday. You're welcome to attend any of them. Office Hours with the professors can be scheduled by appointment.

Grading Policy and Assignment Distribution

Quizzes 5% (10 x 0.5%)
Projects 40% (5 x 8%)
Labs 1% (5 x 0.2%)
Exams 54% (2 x 27%)

Grading Scale

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

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

Quizzes

(0.5% each) There will be 10 multiple-choice quizzes that each count as 0.5%. Quiz 1 will be the only quiz that will allow unlimited attempts, and all others will be only two attempts limited to one hour per attempt. Quiz 0 is ungraded and meant to familiarize you to the course policies. You will have ~9 days to complete each quiz.

Projects

(8% each) There will be five projects, which will count for a total of 40% of your course grade. You have the option to work individually or in a team of two for each of the projects.

- Project 1: Application Security - Buffer overflow, spawning shells using shell code, Return Oriented Programming *(C and x86 Assembly)*
- Project 2: Cryptography - Length extension attacks, hash collision attacks, Padding Oracle attacks, attacks on RSA *(Python)*
- Project 3: Web Security - SQL injection, XSS, CSRF *(HTML and JavaScript)*
- Project 4: Networking - Packet capture analysis, password cracking, TLS, DNS, TOTP algorithms *(Python)*
- Project 5: Forensics - A combination of all concepts from the previous projects

<u>Project Milestones</u>

Projects 1 and 2 will be divided into two milestones. The points assigned to the project will be divided between the two milestones. You **must** submit the solution to the respective milestone before it is due. The project, the milestones and their due dates will be published on both Canvas and on the website.

Labs

(0.2% each) Accompanying each project, we'll ask you to complete a simple assignment that provides an interactive introduction to relevant programming languages or tools. You must complete them individually.

- Lab 1: GDB
- Lab 2: Docker and Python
- Lab 3: Browser DevTools
- Lab 4: Python Sockets
- Lab 5: Autopsy

Exams
(27% each) There are two in person exams; see the course schedule. The first exam will cover roughly the first half of the course; the second exam will primarily focus on the second half of the course but may involve topics from the first half. Each exam will be 75 minutes. Exams will be conducted in person during the class lecture period. You can find the dates on the course website at gtinfosec.org. More details will be given closer to the exam dates.

Late Assignments
If assignments are not submitted by the Canvas specified due date/time, they are late. Course projects may be submitted up to 24 hours late (i.e., if due on Feb 2nd at 11:59 pm, they can be submitted up until Feb 3rd at 11:59 pm), with a flat deduction of 15% of the possible assignment's value. In other words, if a project was worth 100 points and you scored 90 points before the late deduction, your score would be 75/100. After exactly 24 hours, no late submission is allowed (per the next paragraph).

No other late submissions are allowed unless special circumstances subject to Georgia Tech rules (e.g., medical/family emergencies) and with the prior approval of the Professor.

Regrade Requests
For projects, up to one week after each grade is released, you may submit a regrade request via a private post on Ed Discussion. Note that your grade for this project can go up or down if you request a regrade.

For exams, the regrade policy remains the same as the projects. However, we will accept regrade submissions only on Gradescope and not Ed Discussion.

Submission Errors
We are aware that the Autograder's submissions system can have errors sometimes and can prevent you from submitting projects at the last minute (before the deadline). If this happens, please do not panic. Email us at gtinfosec-staff@cc.gatech.edu and attach your solutions for the project to this email along with a screenshot of your error on the Autograder website.

Website and Infrastructure

The official course website is https://gtinfosec.org. All project and lab material will be hosted here. Once you complete a project or lab, you will submit your solutions on the Autograder (https://autograder.gtinfosec.org). Exams and projects that are rubric-based will be held on Gradescope.

Announcements

Course announcements will be made via Canvas Announcements and Ed Discussion. Students are expected to keep up to date with these announcements.

Course Policies, Expectations & Guidelines

Ethics
We will be discussing attacks in this class, some of them quite nasty. None of this is in any way an invitation to undertake these attacks in any fashion other than with informed consent of all involved and affected parties. The existence of a security hole is no excuse. These issues concern not only professional ethics but also Georgia Tech policy and state and federal law. If there is any question in your mind about what conduct is allowable, contact the instructors first.

Prerequisites
CS 2200 or ECE 3057 or ECE 3058

Attendance Policy

The lecture portion of the course will be offered only in-person and you are strongly encouraged (but not required) to attend. A repository of online lectures for a similar version of the course is available. These lectures may be useful in clarifying material or getting a second perspective. Still, ultimately you are responsible for the content, policies, and assignments presented in the on-campus lectures for this course in your assigned section. Students are also expected to be available during the scheduled lecture time and physically attend in person exams.

Academic and Research Honesty/Integrity Statement

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. For information on Georgia Tech's Academic Honor Code, please visit
http://www.catalog.gatech.edu/policies/honor-code/ or
http://www.catalog.gatech.edu/rules/18/

Any student suspected of cheating or plagiarizing will be reported to the Office of Student Integrity. You are prohibited from posting any course materials on the Internet (including public Github). If any student copies your work you posted online, you will be considered as having committed plagiarism as well. Cheating will result in a zero grade for the entire project (e.g., both Part 1 and Part 2)

Usage of Generative AI

We discourage the use of generative AI models, such as ChatGPT. Remember that ultimately you are responsible for all the content you submit. However, if you do decide to use them you

must submit a statement explaining which and how such tools were used, including applicable prompts. Use of generative AI models will not be allowed during the exams.

Core IMPACTS

Not applicable.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404) 894-2563 or http://disabilityservices.gatech.edu/ as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also email your instructor as soon as possible in order to set up a time to discuss your learning needs.

Expectations of Advisors and Advisees

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgment, and responsibility between faculty members and the student body. See http://www.catalog.gatech.edu/rules/22/ for an articulation of some expectations that you should have of us and that we have of you.

Subject to Change Statement

The syllabus and course schedule may be subject to change. It is the responsibility of students to check Canvas, Ed Discussion, emails, and course announcements to stay current in their courses. We will make every effort to communicate changes via these mechanisms.