**Georgia Institute of Technology**  
**Course Syllabus: CS6035 Intro to Information Security**

<table>
<thead>
<tr>
<th>Fall 2019</th>
<th></th>
</tr>
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<tbody>
<tr>
<td><strong>Delivery:</strong> 100% Web-Based, Synchronous</td>
<td><strong>Offered on:</strong> Canvas/Udacity</td>
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<td><strong>Dates course will run:</strong> August 19 – December 12, 2019</td>
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**Instructor Information**

<table>
<thead>
<tr>
<th>Dr. Wenke Lee</th>
<th>Office: Klaus 3222A</th>
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</thead>
<tbody>
<tr>
<td>Office Hours via Blue Jeans per announcements</td>
<td>Email: <a href="mailto:wenke.lee@gmail.com">wenke.lee@gmail.com</a></td>
</tr>
</tbody>
</table>

**General Course Information**

**Description**
This is a graduate-level introductory course in information security. It teaches the basic concepts, principles, and fundamental approaches to secure computers and networks. Its main topics include security basics, security management and risk assessment, software security, operating systems security, database security, cryptography algorithms and protocols, network authentication and secure network applications, malware, network threats and defenses, web security, mobile security, legal and ethical issues, and privacy.

**Pre-Requisites**
You should have taken an undergraduate level course on, or be otherwise familiar with, operating systems and networks. Prior programming experience with C or Java is highly recommended. Knowledge of algebra and discrete mathematics is also recommended.

**Course Materials**

**Required Course Text**
*Computer Security: Principle and Practice*, 4th Edition, by William Stallings and Lawrie Brown. You may consult other versions of the text or more recent materials, however only the material in the 4th Edition of the book and online slides/lecture will be considered in this course.

**Classroom Management Tools**
All video lectures are located on Udacity. Everything else can be accessed here through Canvas. Below summarize all the course-related activities and provides a link to their location in Udacity or Canvas.

- **Video Lectures:** All video lectures are located on Udacity.
- **Projects:** are located on Canvas.
- **Quizzes:** are located on Canvas.
- **Reading Materials:** are located on Canvas.
- **Piazza Discussion:** are located on Canvas.
- **Grades:** are located on Canvas.
Course Requirements, Assignments & Grading

Assignment Distribution and Grading Scale

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Projects</td>
<td>60%</td>
</tr>
<tr>
<td>Exams</td>
<td>30%</td>
</tr>
</tbody>
</table>

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%

Description of Graded Components

Quizzes: (1% each) There will be 10 true/false and multiple-choice quizzes that each count as 1%. Each quiz will be released on a Friday and due in ten days (Mondays) or the day after a holiday or recess. All quizzes are one attempt and answers will be hidden until the quiz has closed.

Projects: (15% each)
- Project 1: Software security: buffer overflow - implement a stack overflow attack and a return-to-libc buffer overflow attack (C programming required)
- Project 2: Malware analysis: learn how to use Cuckoo to analyze malware, analyze 10 malware samples provided and report findings of various malware behaviors (some scripting may be required)
- Project 3: Cryptography: learn example cryptography applications and their vulnerabilities
- Project 4: Web security: implement SQL Injection, XSS, and XSRF attacks (scripting)

Exams: (15% each) There are two exams. Both exams are true/false and multiple-choice. All exams are closed-everything and will last for 60 minutes.

Assignments Due Dates (Time zone)

All assignments are due relative to the Eastern Standard Time Zone (EST). We will not accept assignments submitted late due to time zone issues. You should update your canvas to account for EST if you are in a different time zone.

Late Assignments

No late submissions (projects, quizzes, exams, etc.) are allowed unless special circumstances subject to Georgia Tech rules (e.g., medical/family emergencies, and instructor approvals).
are no exceptions to this rule. If you submitted late because you overslept, forgot to post, etc. we will not accept your submission. Even if your submission is only 1 minute late, we will not accept it.

Regrade Requests
Up to one week after each Project grade is released, you may submit one (and only one) regrade request. We will not accept regrade requests via email, Piazza, or otherwise. We will only accept them through a Google Form submission. A link to each Project regrade form will be sent following each project’s grade release on Canvas. You will only be able to submit this form once, so make sure you’ve worded your request properly. Note that your grade for this project can go up or down if you request a regrade. If the TA grading it sees a grading mistake that costs you points, they will deduct them. Once your project has been regraded, you will receive an email notification. If, after your project has been regraded, you are still unsatisfied, please post privately on Piazza. If you submit a regrade request after this one-week window, we will not answer or accept your regrade request. There are no exceptions to this rule.

Submissions Errors
We are aware that Canvas’ 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. Simply email the TA responsible for grading your submission about the error and attach your solutions of the project to this email along with a screenshot of your error on Canvas. However, you will not be allowed to submit documents that are missing from the submission after initial grades have been returned. This is a graduate course and students are responsible for their submissions.

Grading and Feedback
After every Project deadline, their respective solutions will be released on Canvas. After every Quiz is due, their respective solutions (including your original answers) will be released on Canvas. After each Exam deadline, you will be given feedback on the questions you answered incorrectly only. We will not release full solutions to the exams. Each exam is classified as an “Assignment” on Canvas for technical reasons. So, this feedback can be found under the exam assignment feedback on Canvas once the grades have been released.

Quiz Question Disputes and Regrades
The Head TA and Instructors will determine if a quiz question is unfair based on the statistics after the quiz closes. If the students (as a whole) score less than 40% on a given question, it will be deemed unfair and thrown out. Students will automatically receive credit for this question, although it will take some time to roll out. In this instance, please be patient. As such, we will not be responding to any piazza or slack discussion pertaining to these topics.

Technology Requirements

Computer Hardware and Software
- Browser and connection speed: An up-to-date version of Google Chrome or Firefox is strongly recommended. 2+ Mbps is recommended.
- Operating System: Windows XP or higher with latest updates. Mac OS X 10.6 or higher with latest updates. Any Linux recent distribution will work so long as you can install Python and OpenCV.
- Virtual Machine: You will be provided a virtual machine (VM) useful for performing class assignments and projects. For the projects, the supplied resources are identical to those used to test your submissions. Details for downloading and installing the VM can be found on Canvas.
Proctoring Information
All course exams will be proctored - the proctored exams will be your Exam 1 and Exam 2. A proctored exam is similar to the one you would take in the classroom. This means no open textbooks, notebooks, notes, and other like resources are allowed unless any or all of these materials are allowed. These exams are delivered via a tool called Proctortrack. Proctortrack uses multi-factor biometric authentication to verify the identity of students, upon entry. Each student will provide a face, ID, and knuckle scans, which will be measured against the student’s baseline biometric profile, stored on file. You may also be asked to scan the room around you. Please have a small mirror handy for the room scan. You will have the opportunity to take an onboarding quiz to become familiar with how it all works. The onboarding quiz will be a practice quiz that will not affect your grades in the course. You can take the onboarding quiz as many times as you want. All potential violations are reviewed by a human. If you have any issues with Proctortrack while taking the graded exam, reach out to Proctortrack 24/7 support: https://www.proctortrack.com/support/.

Course Policies, Expectations & Guidelines

Piazza
Piazza will be used as the main communications medium for this class. You are encouraged to post discussions on issues you’re having with projects or otherwise. Please do not post solutions to Piazza. If you do, we may revoke your access to our Piazza page. Please do not post new messages addressing us individually (e.g., Wenke Lee). We have multiple TAs answering Piazza posts on a rotating basis so you will not get a response from Wenke if you do this. Only if the TA feels the need to, they (the TA) will contact the Head TA to see if the situation can be resolved. If it cannot be resolved, the Head TA will contact the Instructor and the Instructor will have the final say on the situation.

Slack
Slack will be used as a secondary communications medium for this class. The TAs will attempt to get to all of your questions but there is no expectation to do so due to the volume and real-time nature. You are welcome to use slack as a platform to discuss with other students, but do not violate the honor code; this will be monitored by TAs. Some TAs may also utilize slack for their office hours and will field questions at that time.

Email & Communication Policy
In order to handle a class of this size, we must delegate specific topics/questions for each Instructor/Head TA/TA to handle/answer. Each Instructor/Head TA/TA will only read the types of emails delegated to them as listed below. They will delete and ignore any other types of emails.

- If you have a regrade request, use the Google Forms link we send you after each project grade release.
- If, after your project has been regraded, you are still unsatisfied with your grade, please post privately on Piazza.
- If you would like to request a deadline extension (projects, quizzes, exams, etc.) because of a Georgia Tech approved reason (e.g., medical emergency), please email the Head TA, CC the Instructor, and attach appropriate documentation (e.g., a doctor’s note for a medical emergency) to your email. Your email’s subject should be named “CS6035 - Deadline Extension Request”. If you do not write the subject as such, your email will be deleted/ignored.
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- If exam grades have been released but you do not see your grade, please email the Head TA with the subject “CS6035 - Exam Grade Issue”. If you do not write the subject as such, your email will be deleted/ignored.
- If quiz grades have been released but you do not see your grade, please email the Head TA with the subject “CS6035 - Quiz Grade Issue”. If you do not write the subject as such, your email will be deleted/ignored.
- If project grades have been released but you do not see your grade, please post privately on Piazza.
- If you would like to ask a question about a particular Instructor/Head TA/TA’s office hour (or office hours’ content), email that particular Instructor/Head TA/TA with the subject “CS6035 - Office Hours”.
- If you would like to ask a question about unclear (or incorrect) wording in projects, quizzes, exam, etc., please post publicly on Piazza.
- If you would like to ask a question regarding help or advice on a project, please post publicly on Piazza.
- If a TA cannot resolve your issue on Piazza (after multiple posts with you), then that TA will contact the Head TA in order to resolve the situation. If the Head TA cannot resolve the situation, that Head TA will contact the Instructor and they will have the final say on the situation. Do not directly contact the Head TA or the Instructor. They will not answer your emails unless otherwise noted here in this list.
- If a TA has not responded to your Piazza post within 2 days, please email the Head TA with the subject “CS6035 - Piazza Post Issue” and provide a link to that Piazza post. If you do not write the subject as such, your email will be deleted/ignored.
- If you have taken the class previously or have .ova files from prior courses, please do not use those files to complete the projects because this will result in a zero.
- Please do not put your projects on public Github. Otherwise, if a student (in the future) copies your codes/projects, the student obviously violates the honor code, but you will also be implicated.
- Do not contact us about releasing grades and solutions. We will do this only when all student submissions are in (accounting for those who may have had a Georgia Tech approved reason such as a medical emergency) and we are ready to release them.
- Do not contact us about re-grading your project after you’ve submitted a regrade request but before we’ve sent you an email notifying you that your project has been regraded. Trust that we are diligently working on re-grading your project and we will notify you when we’re finished.

Online Student Conduct and (N)etiquette

Communicating appropriately in the online classroom can be challenging. In order to minimize this challenge, it is important to remember several points of “internet etiquette” that will smooth communication for both students and instructors:

1. **Read first, Write later.** Read the ENTIRE set of posts/comments on a discussion board before posting your reply, in order to prevent repeating commentary or asking questions that have already been answered.
2. **Avoid language that may come across as strong or offensive.** Language can be easily misinterpreted in written electronic communication. Review email and discussion board posts BEFORE submitting. Humor and sarcasm may be easily misinterpreted by your reader(s). Try to be as matter-of-fact and professional as possible.
3. **Follow the language rules of the Internet.** Do not write using all capital letters, because it will appear as shouting. Also, the use of emoticons can be helpful when used to convey nonverbal feelings. ☺
4. **Consider the privacy of others.** Ask permission prior to giving out a classmate's email address or other information.
5. **Keep attachments small.** If it is necessary to send pictures, change the size to an acceptable 250kb or less (one free, web-based tool to try is picresize.com).
6. **No inappropriate material.** Do not forward virus warnings, chain letters, jokes, etc. to classmates or instructors. The sharing of pornographic material is forbidden.

**NOTE:** The instructor reserves the right to remove posts that are not collegial in nature and/or do not meet the Online Student Conduct and Etiquette guidelines listed above.

### University Use of Electronic Email

A university-assigned student e-mail account is the official university means of communication with all students at Georgia Institute of Technology. Students are responsible for all information sent to them via their university-assigned e-mail account. If a student chooses to forward information in their university e-mail account, he or she is responsible for all information, including attachments, sent to any other e-mail account. To stay current with university information, students are expected to check their official university e-mail account and other electronic communications on a frequent and consistent basis. Recognizing that some communications may be time-critical, the university recommends that electronic communications be checked minimally twice a week.

### Plagiarism & 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. All students enrolled at Georgia Tech, and all its campuses, are to perform their academic work according to standards set by faculty members, departments, schools and colleges of the university; and cheating and plagiarism constitute fraudulent misrepresentation for which no credit can be given and for which appropriate sanctions are warranted and will be applied. 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 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.

You are prohibited from posting course materials including quizzes, exams, and projects on the Internet (including public Github). If any student copies your work that you had posted on-line, you will be considered as having committed plagiarism as well.

### 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 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. See
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http://www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectation 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.

Subject to Change Statement
The syllabus and course schedule may be subject to change. It is the responsibility of students to check Piazza, email messages, and course announcements to stay current in their online courses.
<table>
<thead>
<tr>
<th>Week/Dates</th>
<th>Topic</th>
<th>Assignments</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 August 19</td>
<td>Security Mindset and Software Security</td>
<td>Quiz 1 released on 8/23 and due on 9/3; Project 1 released on 8/23 and due on 9/17</td>
<td>Computer Security by Stallings and Brown: Chapter 1, 10, 11</td>
</tr>
<tr>
<td>2 August 26</td>
<td>Operating System Security and Authentication</td>
<td>Quiz 2 released on 8/30 and due on 9/9</td>
<td>Chapter 12, 3</td>
</tr>
<tr>
<td>3 September 2</td>
<td>Access Control and Mandatory Access Control</td>
<td>Quiz 3 released on 9/6 and due on 9/16</td>
<td>Chapter 4, 27</td>
</tr>
<tr>
<td>4 September 9</td>
<td>Database Security and Malicious Code</td>
<td>Quiz 4 released on 9/13 and due on 9/23</td>
<td>Chapter 5, 6, 13</td>
</tr>
<tr>
<td>5 September 16</td>
<td>Modern Malware</td>
<td>Project 2 released on 9/17 and due on 10/10</td>
<td>Chapter 6, 7</td>
</tr>
<tr>
<td>6 September 23</td>
<td>One-Hour Close-Everything First-Half Exam, covering lessons P1-L1 through P2-L2; Available time window: 9/27 9:00 AM EST through 9/30 11:59 PM EST</td>
<td>Exam 1</td>
<td></td>
</tr>
<tr>
<td>7 September 23</td>
<td>Firewalls</td>
<td>Quiz 5 released on 9/27 and due on 10/7</td>
<td>Chapter 9</td>
</tr>
<tr>
<td>8 October 7</td>
<td>Intrusion Detection and Introduction to Cryptography</td>
<td>Quiz 6 released on 10/4 and due on 10/16</td>
<td>Chapter 8, 2</td>
</tr>
<tr>
<td>9 October 14</td>
<td>Symmetric Encryption and Public-Key Cryptography</td>
<td>Quiz 7 released on 10/11 and due on 10/21; Project 3 released on 10/10 and due on 11/5</td>
<td>Chapter 20, 21</td>
</tr>
<tr>
<td>10 October 21</td>
<td>Hashes and Security Protocols</td>
<td>Quiz 8 released on 10/18 and due on 10/28</td>
<td>Chapters 21, 23</td>
</tr>
<tr>
<td>11 October 28</td>
<td>IPSec and TLS</td>
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<tr>
<td>12 November 4</td>
<td>Wireless and Mobile Security</td>
<td>Quiz 9 released on 11/1 and due on 11/11</td>
<td>Chapter 24</td>
</tr>
<tr>
<td>13 November 11</td>
<td>Web Security</td>
<td>Project 4 released on 11/5 and due on 12/3</td>
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<tr>
<td>14 November 18</td>
<td>Security Management and Cyber Risk Assessment; Law Ethics and Privacy</td>
<td>Quiz 10 released on 11/15 and due on 11/25</td>
<td>Chapter 14, 15, 19</td>
</tr>
<tr>
<td></td>
<td>One-Hour Close-Everything Second-Half Exam, covering lessons P2-L3 through P3-L2; Available time window: 11/22 9:00 AM EST through 11/25 11:59 PM EST</td>
<td>Exam 2</td>
<td></td>
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* Rev A reflects changes in original Syllabus due to chapter number and content changes in the 4th Edition text.

* Rev B reflects changes to the number of Quiz 1 attempts.