CS 4235 / 6035:
Introduction to Information Security
Course Information and Syllabus

1 Basic Information

Instructor:	Prof. Mustaque Ahamad
Teaching Assistant & Grader:	TBA
Class meetings:	TTh 3:05-4:25pm, Klaus 2447
Office hours:	(Mustaque) Wednesdays 1:30-3:00p, Klaus 3140
	(TA/Grader) TBA
Textbook:	Pfleeger and Pfleeger, *Security in Computing*, fourth edition
Course website:	`https://t-square.gatech.edu/portal/site/XLS0813151708201308.201308`

2 Course Description

This course provides an overview of the broad field of information security. It is designed for upper-level undergraduate and first-year graduate students and assumes that students have prior computer and programming knowledge. Its goal is to help students understand why information security is an important priority in society today. The course also introduces the various technology protections and policy safeguards that help secure information systems. The technical content of the course includes essential concepts and methods for providing and evaluating security of various components of an information system (operating systems and applications, networks, protocols, and so on). In addition to its technical content, the course touches on the importance of management and administration, the place information security holds in overall business risk, social issues such as individual privacy, and the role of public policy.

The course will be organized around a few broad themes:

- *Foundations*: threat modeling, security mindset and essential concepts (policy, CIA, etc.)
- *Software security*: vulnerabilities and protections, malware, program analysis
- *Cryptography essentials*: encryption, authentication, hashing, symmetric and asymmetric crypto
- *Network security*: wired and wireless networks, protocols, attacks and countermeasures
- *Application security*: databases and web security
- *Security management and policies*: Business drivers and risk mitigation, privacy and anonymity, policy and compliance.

3 Course Objectives

The main objective of this course is to provide you with the necessary background, foundation, and insights into the many dimensions of information security. This knowledge will serve as basis for deeper study into selected areas of the field in the future, or as an important component in your further studies and involvement in computing as a whole. Other objectives of the course are to help you:

- Understand information security's importance in our increasingly computer-driven world.
- Master the key concepts of information security and how they "work."
- Develop a "security mindset:" learn how to critically analyze situations of computer and network usage from a security perspective, identifying the salient issues, viewpoints, and trade-offs.

As a part of your general education, the course will also help you learn to:

- Clearly and coherently communicate (both verbally and in writing) about complex technical topics.
- Work and interact collaboratively in groups to examine, understand and explain key aspects of information security.

4 Teaching Philosophy

The primary purpose of this course is to help you understand that information systems we rely on are targets of a variety of attacks, and their design, implementation and deployment needs to employ safeguards to to defend against these attacks. Because the subject is so broad and complex, and is rapidly changing, it is not something one can learn by instruction alone. Lectures can only expose you to the technical and policy dimensions of the subject, helping to lay a solid foundation with which you can gain a deeper understanding by your own efforts. By reading additional material and actively participating in class, you will be able to demonstrate your desire to learn beyond what is covered in lectures.

I will use homeworks to reinforce learning, and critical writing assignments to make you evaluate and challenge what you read. Programming assignments will give you practical experience with protocols, vulnerabilities, and attacks.

There will be time for classroom discussion based on additional readings and from certain sections of the textbook. You will be expected to participate actively in class discussions. On any given issue, you may be asked to summarize and critique reading assignments from the text or articles that you have read. You will have many opportunities to express and defend your views in class and in your assignments, and are expected to take advantage of these opportunities.

5 Your Responsibilities

5.1 Class Participation

The best way to learn this subject (or anything!) is through active engagement with the material. In this course, part of that engagement includes attending and actively participating during class. (As shown below, 10% of your grade is determined by these factors.) Engagement will take several forms:

- You will be expected to read, interpret, and summarize the assigned materials for yourself and others.

- You will be expected to study problems, techniques, and approaches individually and in groups, and then present your findings both orally and in writing.
- You will be expected to critique the perspectives/opinions of both authors and classmates in discussions and position papers.

If you are unable to attend class, notify the instructor by email beforehand for consideration of an excused absence. Unexcused absences will factor negatively into your grade.

5.2 Classroom Conduct

You are expected to be respectful to the instructor and your fellow students. This means arriving on time, avoiding distracting behavior, and remaining engaged in the discussion of the material. You may use a laptop at your discretion, as long as it does not cause a distraction to you or other students (audio should be turned off). Cell phones should be silenced or turned off, and should never be answered in class; if you believe a call is urgent, please step outside to answer it.

During any exam or quiz, all electronic devices must be powered down and put away. Violating this policy may lead to a zero score and potentially a referral to the Office of Student Integrity.

Class meetings will often include interactive discussions among the instructor and students. At times these discussions may involve challenges or spirited disagreements with one another's premises, viewpoints, or conclusions. These are consistent with (and often necessary for) the open exchange of ideas, but should always be conducted with civility and mutual respect.

5.3 Ethics

In this course you will learn (among other things) about vulnerabilities in information systems, and how they may potentially be exploited. This is intended in the spirit of open scientific inquiry to help you understand how such vulnerabilities may be avoided or removed, and how attackers go about circumventing security measures. You must use this information responsibly, legally, and ethically. *Under no circumstances should you access or alter any computing system without permission from its legitimate owner.* Information security can be fraught with ethical and legal pitfalls, so you should consult the instructor if you are ever in doubt about a plan of action. You are encouraged to read and understand the Association for Computing Machinery's Code of Ethics, at `http://www.acm.org/about/code-of-ethics` .

6 General Assignment Guidelines

6.1 Technical Format

Although the most important thing to do in any assignment is to show that you have thought about the topic and gained some understanding, grading will also take technical format and presentation into account.

All written assignments must be typed. Page counts for assignments assume 12 point font, double line spacing, letter-size paper, and 1-inch margins. Feel free to use any software you find convenient for writing (e.g., Word, LaTeX, Pages, etc).

Each paper should clearly identify the author(s), date, and assignment number. If the assignment discusses an article, a proper citation for that article (author, title/headline, publication name, date, and page number or URL) must be included in your write-up, so that the grader may obtain a copy if needed. (You may also wish to attach a photocopy or printout of at least the first page of the article.)

6.2 Writing Style

Your writing should be clear and concise, with correct grammar and spelling. All writing assignments should be proofread and corrected before submission; incomplete sentences, broken grammar, or lack of clarity will adversely affect your score. For footnotes and bibliographies, use a standard and consistent citation style. You are encouraged to learn and use standard bibliographic tools such as EndNote (for Word, available for free from OIT) or BibTeX (for LaTeX).

6.3 Late Policy

Homework and papers are due at the start of class on the due date, unless otherwise specified. *If permission is obtained in advance from the instructor*, late work generally will be accepted, with a penalty. Work not turned in by a designated final cut-off will receive a zero score. Exceptions to this policy due to extreme hardship will be considered and granted by the instructor only before the assignment's due date.

6.4 Academic Honesty

The instructor fully supports the Georgia Tech Academic Honor Code as presently defined for the Georgia Tech community. A copy of the Honor Code can be found at this Georgia Tech website. All students are expected to maintain high standards of academic integrity by giving proper credit for all work referenced, quoted, etc. Unless otherwise stated, all work is individual work by each student.

Plagiarism is defined in Webster's Dictionary as to "... pass off (the ideas or words of another) as one's own: use (another's production) without crediting the source." You must quote and attribute any words that are not your own. Plagiarism will be dealt with according to the GT Academic Honor Code.

Violations of the academic honesty policy may lead to a zero score on the assignment in question for the first violation, and a penalty up to an including a failing grade for the course for a second violation. In addition, all violations will be reported to the Office of Student Integrity.

7 Grading

Grades will be based on the following evaluated tasks:

- Homework & programming projects (20%)
- Group project (10%)
- Midterm exam (30%)
- Final exam (30%)
- Class participation & attendance (10%)

Grades will be posted at T-Square as they become available. If you believe a grading error has been made, you may contest it by notifying the graders. Contact the instructor about a grading issue only if you strongly believe that the error is significant, and that the grader has not satisfactorily resolved the issue.