

# Syllabus

## Course Information

### Course Information

Course Number: CSCE 465

Course Title: Computer and Network Security

Section: 501

Time: MWF 8:00-8:50am

Location: HRBB 124

Credit Hours: 3

### Instructor Details

Instructor: Martin Carlisle

Office: PETR 221

Phone: 979-862-7928

E-Mail: the\_doctor@tamu.edu

Office Hours: will be posted on Canvas

### Course Description

Fundamental concepts and principles of computer security, operating system and network security, secret key and public key cryptographic algorithms, hash functions, authentication, firewalls and intrusion detection systems, IPSec and VPN, wireless and web security.

### Course Prerequisites

CSCE 313 and CSCE 315; junior or senior classification; or approval of instructor.

### Special Course Designation

None

## Course Learning Outcomes

This course primarily aims at providing a level of literacy in information security adequate enough to understand the security implications on a number of diverse domains including software engineering; networking; privacy; and policy.

A secondary objective is to provide a working knowledge of topics such as cryptography, privacy, network security, and infrastructure management, so that students can acquire the necessary background for more advanced security courses.

By the end of this course, students will be able to reason about systems from the perspective of a security engineer. That is, they should be able to define the system to protect; determine the security properties that are desired for this system; identify the possible threats to these security properties, and their likelihood of occurrence; and consider possible mitigations against these threats.

## Textbook and/or Resource Materials

### Required Textbook

Introduction to Computer Security, by Michael Goodrich and Roberto Tamassia, Addison-Wesley Pearson, ISBN-10: 0-321-51294-4

### Optional Textbook

Handbook of Applied Cryptography – available online at: <http://cacr.uwaterloo.ca/hac/>  
(<http://cacr.uwaterloo.ca/hac/>)

## Grading Policy

Homeworks: 550 points (distributed across 6 homeworks). Your assignments must be typed and in PDF format. Submit assignment to gradescope (<https://www.gradescope.com>)

You are encouraged to discuss concepts with others, but **you must do all assignments by yourself** unless specifically instructed otherwise. If you refer to any source while doing your homework, you must give credit in your solution, (this holds true whether it be a person, paper, book, solution set, web page or whatever). You **MUST** write up the assignments **in your own words**. Never copy someone else's words and turn them in. For example, "the academic integrity policy on this syllabus was based on one obtained from Prof. Jennifer Welch", or "Sally Smith walked me through the solution to #38 and then I did #39 on my own" (assuming #38 was not on the homework).

Midterm exam: 200 points

Final exam: 250 points

A  $\geq$  900 points  
B = 800-899 points  
C = 700-799 points  
D = 600-699 points  
F =  $<$ 600 points

We will make an effort to complete the grading of work within one week of the turnin date. If you believe your work was graded incorrectly or incompletely, you must either 1) meet with a TA within one week of the date the work is returned, or 2) submit a regrade request in Gradescope within one week (when applicable). Only if you can prove to the TA that your solution is correct and complete will your work be regraded.

## Late Work Policy

Late homeworks are not accepted and are worth 0 points. If you have an extended excused absence (per rule 7) that prevents you from completing a homework, please coordinate with the professor as soon as possible for a make-up.

## Version Control

You are strongly encouraged to use a version control system to track changes and back up your work. Texas A&M has an institutional GitHub account (<https://github.tamu.edu>) that you can use. Do NOT create public repositories containing your assignment solutions as this may lead to unauthorized copying of your work and a violation of the Aggie Code of Honor.

## Course Schedule

Week	Topic	Required Reading
1 (Jan 19,21)	Introduction Security Properties and Principles Security vocabulary	Syllabus GT Ch. 1 Thompson paper

2 (Jan 24,26,28)	OS Security  Program vulnerabilities	GT Ch. 3  <a href="https://www.scmagazine.com/home/security-news/feds-charge-14-with-making-atm-cashouts-appear-like-one/">https://www.scmagazine.com/home/security-news/feds-charge-14-with-making-atm-cashouts-appear-like-one/</a> ( <a href="https://www.scmagazine.com/home/security-news/feds-charge-14-with-making-atm-cashouts-appear-like-one/">https://www.scmagazine.com/home/security-news/feds-charge-14-with-making-atm-cashouts-appear-like-one/</a> )  AlephOne paper
3 (Jan 31, Feb 2,4)	Program vulnerabilities <b>HW 1 Due Mon Jan 31</b>	1.8  2.1-2.2
4 (Feb 7,9,11)	Program vulnerabilities  Crypto-symmetric	GT Ch. 8.1
5 (Feb 14,16,18)	Crypto-symmetric vs. public	GT Ch. 8.5, 8.2
6 (Feb 21,23,25)	Crypto-hash functions and signatures, PKI <b>HW 2 Due Mon Feb 21</b>	GT Ch. 8.3-8.4
7 (Feb 28, Mar 2,4)	Malware <b>MIDTERM EXAM - Weds March 2</b>	GT Ch. 4
8 (Mar 7,9,11)	Network Security – TCP/IP, UDP, NAT <b>HW 3 Due Mon Mar 7</b>	GT Ch. 5
March 14-18	SPRING BREAK	
9 (Mar 21,23,25)	Network Security – DNS, Firewalls, VPN	GT Ch. 6.1-6.4
10 (Mar 28, 30,	Wireless Security	GT Ch. 6.5

Apr1)	Web Security <b>HW 4 Due Wed Mar 30</b>	GT Ch 7
11 (Apr 4,6,8)	Web Security	GT Ch. 7
12 (Apr 11,13) April 15 - NO CLASS	Security Models <b>HW 5 Due Wed Apr 13</b>	GT Ch. 9
13 (Apr 18,20,22)	Distributed Security	GT Ch. 10
14 (Apr 25,27,29)	Physical Security <b>HW 6 Due Wed Apr 27</b>	GT Ch. 2
15 (May 2)	Review Last day of class is Mon May 2	13.4, 13.5

Final exam date: (from **Registrar's website** [\\_\(https://registrar.tamu.edu/Courses,-Registration,-Scheduling/Final-Examination-Schedules#6-May5\(Thursday\)\)\\_](https://registrar.tamu.edu/Courses,-Registration,-Scheduling/Final-Examination-Schedules#6-May5(Thursday)))). Section 501: May 5, 10:00 a.m. – 12:00 p.m.

## University Policies

This section outlines the university level policies. The TAMU Faculty Senate established the wording of these policies.

### Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to **Student Rule 7** [\\_\(https://student-rules.tamu.edu/rule07/\)\\_](https://student-rules.tamu.edu/rule07/) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

### Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to **Student Rule 7** (<https://student-rules.tamu.edu/rule07/>) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" (**Student Rule 7, Section 7.4.1** (<https://student-rules.tamu.edu/rule07/>)).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (**Student Rule 7, Section 7.4.2** (<https://student-rules.tamu.edu/rule07/>)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (**See Student Rule 24** (<https://student-rules.tamu.edu/rule24/>)).

## Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" (**Section 20.1.2.3, Student Rule 20** (<https://aggiehonor.tamu.edu/Rules-and-Procedures/Rules/Honor-System-Rules/>)).

### Texas A&M at College Station

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at [aggiehonor.tamu.edu](https://aggiehonor.tamu.edu/) (<https://aggiehonor.tamu.edu/>).

## Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources office on your campus (resources listed below).

Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

## Texas A&M at College Station

*Disability Resources is located in the Student Services Building or at (979) 845-1637 or visit [disability.tamu.edu](https://disability.tamu.edu/) [\(https://disability.tamu.edu/\)](https://disability.tamu.edu/).*

## Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](https://rules-saps.tamu.edu/PDFs/08.01.01.M1.pdf)  [\(https://rules-saps.tamu.edu/PDFs/08.01.01.M1.pdf\)](https://rules-saps.tamu.edu/PDFs/08.01.01.M1.pdf)):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

## Texas A&M at College Station

*Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with [Counseling and Psychological Services](https://caps.tamu.edu/) [\(https://caps.tamu.edu/\)](https://caps.tamu.edu/) (CAPS).*

*Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's [Title IX webpage](https://titleix.tamu.edu/) [\(https://titleix.tamu.edu/\)](https://titleix.tamu.edu/).*

## Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in healthy

self-care by utilizing available resources and services on your campus.

### **Texas A&M College Station**

*Students who need someone to talk to can contact **Counseling & Psychological Services** (<https://caps.tamu.edu/>) (CAPS) or call the **TAMU Helpline** (<https://caps.tamu.edu/helpline/>) (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at **suicidepreventionlifeline.org** (<https://suicidepreventionlifeline.org/>).*

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