

CSCE 3560/5562 – Cloud Security
Spring 2026

CSCE 3560/5562 – CLOUD SECURITY
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Please note that this is a cross-listed course (offered to both undergraduate and graduate students). Unless otherwise mentioned, the syllabus below applies to everybody.

Class Location/Time: MoWe 10:00 AM - 11:20 AM (Jan 12, 2026 – May 8, 2026) in NTDP B155

Instructor: Dr. Cihan Tunc
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E-mail Address: cihan.tunc@unt.edu
Office Hours: Mo 2 PM – 4 PM

Instructional Assistants

Fatima Shibli
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E-mail Address: fatima.shibli@unt.edu
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Amal Alshehri
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Office Hours: Mo 12 PM – 2 PM

Canvas: This course will use the Canvas learning management system (LMS) to distribute course materials, communicate and collaborate online, post grades, and submit assignments. You are responsible for checking the Canvas course site regularly for class work and announcements. For the communication (e.g., clarification of a lecture material, assignment, or project, it is recommended to use Canvas first (e.g., Discussions). For other concerns or questions, feel free to send us a message from Canvas. The messages will be generally replied in one day (if not in hours); however, due to unexpected reasons, it may end up a bit longer (if you are not receiving any response in two days, please message me again). And, please be patient!

COURSE DESCRIPTION

This course will introduce theoretical and practical aspects of computer systems security and present ways to protect a computer system with an additional focus on the distributed computing systems. Topics include operating system security, hypervisors, virtualization security, storage security, trusted hardware, trusted platform modules, application isolation, hardware security modules, cryptoprocessors, and cloud and IoT security. Students will also explore emerging security challenges facing computer systems based on recent research papers.

PREREQUISITE(S)

CSCE 3560: CSCE 3600 and CSCE 3550 with a grade of C or better.

CSCE 5562: No prerequisites.

Linux, programming, and system knowledge highly needed.

SUGGESTED OPTIONAL REFERENCE TEXT(S)

- *Computer Security: Principles and Practice (4th Edition)*, William Stallings and Lawrie Brown, Prentice Hall, 2018, ISBN-13: 978-0134794105.
- *Principles of Computer Security: CompTIA Security+ and Beyond, Fifth Edition*, Wm Arthur Conklin, Greg White, Chuck Cothren, Roger Davis, and Dwayne Williams, McGraw-Hill Education, 2018, ISBN-13: 978-1260026016.

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- *Security in Computing, 5th Edition*, Charles P. Pfleeger, Shari Lawrence Pfleeger, and Jonathan Margulies, Prentice Hall, 2015, ISBN 978-0-13-408504-3.

COURSE OUTCOMES

Upon successful completion of this course, the student will be able to:

1. Examine different layers of the computer system and identify their operations and connections with the other layers.
2. Describe and analyze the vulnerabilities in computer system layers including operating system, applications, hypervisors, storage, etc.
3. Demonstrate how to detect and prevent existing vulnerabilities in a computer system.
4. Analyze and address/mitigate the detected vulnerabilities in hardware modules.
5. Incorporate various defense techniques to protect a computer system.

GRADING POLICY

Course grade will be a weighted average according to the following:

Homework Assignments	20%
Lab Assignments	20%
Group Project	20%
Midterm Exam	20%
<u>Final Exam</u>	<u>20%</u>
Total	100.0%

Homework Assignments: Homework will be assigned based on the lectures and reading materials. These assignments are meant for you to become familiar with the course materials and to aid you in mastering the concepts.

Lab Assignments: We will have some lab assignments for hands-on experience in this domain. You may need to create a virtual machine on your laptop for this case. If you do not have the sufficient computational power, please contact me.

Group Project: Students will complete a group project to apply the material and techniques learned in class (focusing on cybersecurity).

Midterm Exams: There will be two midterm examinations given in this course.

Final Exam: There will be a final exam given during the scheduled time according to the University. *All students are expected to take the final exam during the scheduled time period.*

Final Grading

A = [90%, 100%]

B = [80%, 90%)

C = [70%-80%)

D = [60%-70%)

F = [0%-60%)

TENTATIVE SYLLABUS TOPICS (subject to change):

- Introduction to computer systems security
- Trusted hardware
- Hardware security modules
- Cryptoprocessors
- Trusted platform modules (TPM)
- Operating systems security
- Storage and data security
- Application isolation and containers

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- Hypervisors
- Virtualization security
- Cloud computing fundamentals
- Cloud security best practices
- IoT and security (if time permits)

SCHEDULE

Based on <https://registrar.unt.edu/registration/spring-academic-calendar.html>

Classes Begin: Jan 12, 2026

Martin Luther King Jr Holiday: Jan 19, 2026 (no classes)

Spring Break: March 9-15, 2026 (no classes)

Final Project Due: April 28, 2026, 9:00 AM – late submissions will not be accepted.

Pre-Finals Days are the Wednesday and Thursday before Reading Day (April 29 and 30, 2026).

Reading Day: May 1, 2026.

Final Exam: According to <https://registrar.unt.edu/exams/final-exam-schedule/spring>, the final exam will be held on Saturday, May 2, 2026 between 7:30 a.m. - 9:30 a.m. in the same classroom.

COURSE POLICIES

Attendance Policy

Class attendance is regarded as an obligation as well as a privilege. All students are therefore expected to attend each class meeting. A student who misses class is still responsible to find out what was discussed and to learn the material that was covered and obtain the homework that was assigned on the missed day. The instructor is not responsible for re-teaching material missed by a student who did not attend class. Therefore, each student is accountable for and will be evaluated on all material covered in this course, regardless of attendance. Excessive student absences may have a negative impact on a student's comprehension and learning. If there are extenuating circumstances, please notify your instructor so that you can work together to ensure your success in learning the material. Please arrive on time to find a seat, prepare your materials, etc.

Class Participation

Class participation is highly suggested. Even though the attendance may not be directly involved in the grading policy, the discussions and examples throughout the semester may be a part of the exams. Correct participation may help you gain some bonus points. Nevertheless, disrespecting behavior in the class (e.g., noise, chatting, spending time on phone/computer) will not be accepted.

Acceptable Student Behavior

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The university's expectations for student conduct apply to all instructional forums, including university and electronic classrooms, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at <http://deanofstudents.unt.edu>

Unacceptable behaviors include but not limited to disruptions (talking, computer/tablet/phone usage, interrupting the activities), any disrespectful acts, irrelevant actions, and threatening actions (e.g., violence, harassment, threats, vandalism).

Assignment Policy

Each assignment will be uploaded to Canvas. The assignment can be theoretical and/or hands-on questions that may require writing some code or installing a software and running it, analyzing some data, etc. You

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will be uploading your answers through Canvas drop box. Submissions through emails or through comments, or through links will NOT be accepted/reviewed.

Late Work

Late submissions will result in losing 1 point per hour for the first two days only; after two days, the late submissions will not be accepted. The late submissions for the projects will never be accepted. For special circumstances (e.g., health) with the proper documents, contacting the professor in advance is suggested.

Examination Policy

The midterm and final exams will be *closed-book/closed-notes exams*. There will be no cheat-sheet, no books, no computers, etc. Other than emergencies (such as health), there will be no make-up exams, and, in case of a make-up exam, we will be discussing the policy and time individually case by case.

Feedback

The feedback (for the assignments, labs, midterm, etc.) will be provided within two weeks approximately. Please note that we have a large class and there can be some delays. The students can request for a review of their answers only within 10 days of grade announcements. Late requests may not be considered.

Use of AI for the assignments: Based on the Student Academic Integrity Policy (UNT Policy 6.003) and AI, Plagiarism, and Academic Integrity at UNT Policy (<https://guides.library.unt.edu/plagiarism/at-unt>), any form of "unauthorized assistance" constitutes cheating. If the use of AI is not explicitly requested/authorized in a question, the violation is "cheating". Therefore, the use of AI in assignments are NOT welcomed unless it is asked in the question. Such a cheating can result in the failure of the class (F) as follows:

- The assignments will be evaluated using AI detection tools, e.g., Turnitin.
- If a submission exceeds the soft threshold (i.e., 10% similarity), a deduction of two times the similarity will be applied (e.g., if you have a similarity of 11%, $2 \times 11\% = 22\%$ deduction for that assignment will occur).
- If a submission exceeds the hard threshold (i.e., 25% similarity), the assignment will be graded as 0 (zero).
- For the second time exceeding the hard threshold, the student will automatically get an F (fail) from the class and may be reported to the university.
- Similarities in exams and the project will not be tolerated. For the project, if the similarity exceeds the hard threshold, the entire group will receive a zero (even if it is the first time).

Syllabus Change Policy

This is a tentative syllabus that might be changed. Upon a change, I will be notifying everybody through Canvas announcements

UNT POLICIES

Academic Integrity

This course follows UNT's policy for *Student Academic Integrity* that can be found at <https://policy.unt.edu/policy/06-003> as well as the *Cheating Policy* for the Department of Computer Science and Engineering. Specifically, the first instance of a student found to have violated the academic integrity (i.e., cheating) policy will result in a grade of "F" for the course and have a report filed into the Academic Integrity Database, which may include additional sanctions.

Course Evaluation

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Student Perceptions of Teaching (SPOT) is the student evaluation system for UNT and allows students the ability to confidentially provide constructive feedback to their instructor and department to improve the quality of student experiences in the course.

ODA Statement

The University of North Texas makes reasonable academic accommodations for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information see the Office of Disability Accommodation website at <http://www.unt.edu/oda>. You may also contact them by phone at 940.565.4323.

Emergency Notification & Procedures

UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course materials.

Retention of Student Records

Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Blackboard online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

Sexual Assault Prevention

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex and therefore prohibit sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking, and/or sexual assault, there are campus resources available to provide support and assistance. UNT's Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim's compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-565- 2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the *Title IX Coordinator* at oeo@unt.edu or at (940) 565 2759.

Technical Requirements & Skills

Minimum Technology Requirements

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- Computer (*a computer that can run multiple virtual machines is suggested; if you don't/can't have a computer with the required computational resources, please contact me and we will be looking for the solutions*)
- Reliable Internet access
- [Canvas Technical Requirements](https://clear.unt.edu/supported-technologies/canvas/requirements) (<https://clear.unt.edu/supported-technologies/canvas/requirements>)
- The University is committed to providing a reliable course system for all users. However, in the event of an unexpected server outage or any unusual technical difficulty which prevents students from completing a time-sensitive assessment activity, the instructor will extend the time windows and provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and contact the UNT Student Help Desk: helpdesk@unt.edu or 940.565.2324 and obtain a ticket number. The instructor and the UNT Student Help Desk will work with the student to resolve any issues at the earliest possible time.

Computer Skills & Digital Literacy

- Using Canvas
- Using email with attachments
- Downloading and installing software
- Using office programs
- Creating, configuring, and using virtual machines
- Programming experience with Python or C/C++ and Bash is recommended
- Basic experience with Linux is recommended
- Networking knowledge, etc.

Rules of Engagement

- Treat your instructor and classmates with respect in email or any other communication.
- Always use your professors' proper title: Dr. or Prof., or if in doubt use Mr. or Ms.
- Unless specifically invited, don't refer to your instructor by first name.
- Use clear and concise language.
- Remember that all college-level communication should have correct spelling and grammar (this includes discussion boards).
- Avoid slang terms such as "wassup?" and texting abbreviations such as "u" instead of "you."
- Use standard fonts such as Ariel, Calibri or Times New Roman and use a size 10, 11 or 12 point font
- Avoid using the caps lock feature AS IT CAN BE INTERPRETED AS YELLING.
- Limit and possibly avoid the use of emoticons.
- Be cautious when using humor or sarcasm as the tone is sometimes lost in an email or discussion post and your message might be taken seriously or sound offensive.
- Be careful with personal information (both yours and others').
- Do not send confidential information via e-mail
- See these Engagement Guidelines (<https://clear.unt.edu/online-communication-tips>) for more information.

Getting Help

Technical Assistance

UIT Help Desk: <http://www.unt.edu/helpdesk/index.htm>

Email: helpdesk@unt.edu

Phone: 940-565-2324

In-Person: Sage Hall, Room 130

Walk-In Availability: 8am-9pm

Telephone Availability:

Sunday: noon-midnight

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Monday-Thursday: 8am-midnight

Friday: 8am-8pm

Saturday: 9am-5pm

Laptop Checkout: 8am-7pm

For additional support, visit [Canvas Technical Help](https://community.canvaslms.com/docs/DOC-10554-4212710328) (<https://community.canvaslms.com/docs/DOC-10554-4212710328>)

Student Support Services

UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its severity. Listed below are several resources on campus that can support your academic success and mental well-being:

Student Health and Wellness Center: <https://studentaffairs.unt.edu/student-health-and-wellness-center>

Counseling and Testing Services: <https://studentaffairs.unt.edu/counseling-and-testing-services>

UNT Care Team: <https://studentaffairs.unt.edu/care>

UNT Psychiatric Services: <https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry>

Individual Counseling: <https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling>

Other student support services offered by UNT include Registrar (<https://registrar.unt.edu/registration>)

Financial Aid: <https://financialaid.unt.edu/>

Student Legal Services: <https://studentaffairs.unt.edu/student-legal-services>

Career Center: <https://studentaffairs.unt.edu/career-center>

Multicultural Center: <https://edo.unt.edu/multicultural-center>

Counseling and Testing Services: <https://studentaffairs.unt.edu/counseling-and-testing-services>

Pride Alliance: <https://edo.unt.edu/pridealliance>

UNT Food Pantry: <https://deanofstudents.unt.edu/resources/food-pantry>

Academic Support Services

Academic Resource Center: <https://clear.unt.edu/canvas/student-resources>

Academic Success Center: <https://success.unt.edu/asc>

UNT Libraries: <https://library.unt.edu/>

Writing Lab: <http://writingcenter.unt.edu/>