

# FOUNDATIONS OF CYBERSECURITY

## CSCE 3550.001 – Summer 2023

**Course Instructor:** Dr. Pradhumna Shrestha

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- Include CSCE 3550.001 in subject line
- Always use your official UNT email address

**Class Time:** MoWe 10:00 AM – 11:50 AM @K120

**Office Hours:** Mo 12 PM-1 PM @F265

**Textbook:** *Security in Computing, 5th Edition*, Pfleeger, Pfleeger, & Margulies, Prentice Hall, 2015, ISBN 978-0-13-408504-3.

**Reference Textbook:** *Introduction to Computer Security*, Matt Bishop, Pearson, 2005, ISBN 0-321-24744-2.

**Prerequisites:** CSCE 3600

**Canvas:** This course will use Canvas, a Web-based course management system, 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.

### COURSE DESCRIPTION

The aim of this course is to introduce the concepts and principles of computer security and privacy. It covers theory and practice of computer security and privacy including OS and network security, security threats and countermeasures against them, cryptography, risk analysis and data privacy.

### COURSE OUTCOMES

Course outcomes are measurable achievements to be accomplished by the completion of a course. These outcomes are evaluated as part of our ABET accreditation process.

1. Understand common security terminology, threats, vulnerabilities, and security design principles
2. Understand basic cryptography concepts, and specific commonly used algorithms and protocols.
3. Understand common program vulnerabilities, and secure programming techniques.
4. Understand formal security models, including Bell-LaPadula (MLS), Biba, and Chinese Wall security.
5. Understand basic network security issues and controls.
6. Understand administrative issues in security, such as planning, security policies, and risk analysis.
7. Understand privacy concepts and data anonymization

8. Obtain hands-on experience in using common security tools, such as firewalls, intrusion detection systems, and port scanning software.

## **GRADING**

Attendance/Class Participation: 5.0%

Homework: 15.0%

Laboratory Assignments: 15.0%

Project: 15.0%

Midterm Exam: 25.0%

Final Exam: 25.0%

## **Notes:**

### **ATTENDANCE POLICY**

Class attendance is a graded activity and will be recorded via a quiz question. The question may be given at any time during the class and will be available for 20 minutes. If you miss the question, your attendance will not be counted.

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.

Attendance/Participation grades will be based on attendance, contribution to in-class discussions, and assessment of any in-class work. Disruptive behavior and unexcused absences deemed excessive will result in a lower attendance/participation grade.

### **HOMEWORK ASSIGNMENTS**

Homework will be assigned based on material from the lectures and textbook. These assignments are meant for you to become familiar with the course material and this practice will aid you in mastering the concepts on the exams.

### **LABORATORY EXERCISES**

Students will complete three in-depth hands-on laboratory exercises during the semester intended to give a more thorough view of computer security. These lab sessions will be conducted during our scheduled class hours. The classes utilized for lab sessions will be announced in advance. You may choose to complete this lab session on your own machine without attending the class and attendance is not mandatory. But if you choose not to attend, you will need to finish the assignment on your own. It is critical that you understand that any OS you install for these labs will be installed

on the VM and not your physical machine. Trying to install an OS on your physical machine may result in loss of your data.

## **PROJECT**

A project will be given to be completed over the semester. The project submission and final report is due on 7/21/23 11.59 PM.

A list of topics and requirements is available on Canvas.

## **MID-TERM EXAM**

There will be a midterm examination given in this course. The tentative date for the exam is 6/28. The confirmed date and pattern of this exam will be posted on Canvas and announced in class at least one week prior to the date of the exams.

## **FINAL EXAM**

There will be a final exam on 07/26. All students are expected to take the final exam during the scheduled time period.

## **GRADING POLICY**

Grades will be posted on Canvas throughout the semester to provide an ongoing assessment of student progress, though final assessment will be measured using the weighted average above.

Also, once a grade is assigned on Canvas, students have one week to dispute the grade. The proper channel for grade disputes is to first go to the original grader (such as the TA or IA) in an attempt to resolve the issue. If, however, a resolution cannot be reached between the student and the grader, the student shall then go to the instructor who will have the final say on the grade.

## **STUDENT RESPONSIBILITY**

Students are responsible for submitting the *correct* assignments (i.e., uploading the proper files) for each applicable assignment submission on Canvas. When an incorrect assignment is submitted to Canvas, students wanting to resubmit with the correct file(s) *after the due date has passed* will have their assignment assessed a 30% reduction penalty. Proof must be given (i.e., timestamp for the file on the CSE machines) that the assignment was completed on time. If you have any questions or concerns about your submission, please work with your instructor or TA/IA for this course to ensure the correct file(s) is/are submitted.

## **ADA STATEMENT**

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking 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 an accommodation letter to be delivered to faculty to begin a private discussion regarding

your specific needs in a course. You may request accommodations at any time, however, ODA notices of 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 accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information, see the Office of Disability Accommodation website at <http://disability.unt.edu>. You may also contact them by phone at (940) 565-4323.

## **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 classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at <http://deanofstudents.unt.edu>.

## **ACADEMIC DISHONESTY**

This course follows the Department of Computer Science and Engineering *Cheating Policy*. Specifically, students caught cheating or plagiarizing will receive an "F" in the class and additionally, the incident will be reported to the Academic Integrity Database.

Individual assignments, including laboratory exercises and projects, in this course must be the sole work of the individual student. You should not work with other students on shared program solutions or use solutions found on the Internet. Specifically, you should never copy someone else's solution or code, and never let a classmate examine your code. If you are having trouble with an assignment, please consult with your instructor or TA/IA assigned to this course. Failure to adhere to these strict standards may be cause for disciplinary action even leading to expulsion from the University.

Students are responsible for being familiar with the university standard for academic integrity. In the case that the above description or any in-class discussion of appropriate and inappropriate collaboration do not answer all of your questions, please meet with your instructor and look at the university Student Rights and Responsibilities web page.

## **SYLLABUS REVISIONS**

This syllabus may be modified as the course progresses should the instructor deem it necessary. Notice of changes to the syllabus shall be made through Canvas and/or class announcement.

## TENTATIVE SCHEDULE

Date	Items
05/22	Syllabus, Topic 1
05/24	Topic 2
05/29*	-
05/31	Topic 2
06/05	Topic 2
06/07	Topic 3
06/12	Lab 1
06/14	Topic 4
06/19**	-
06/21	Topic 5
06/26	Review, Topic 5
06/28	Mid-Term Exam
07/03	Lab 2
07/05	Topic 6
07/10	Topic 6
07/12	Lab 3
07/17	Topic 7
07/19	Topic 7
07/24	Topic 8, Review
07/26	Final Exam

05/29\*: Memorial Day No Classes

06/19\*\*: Juneteeth No Classes