CS 4173/5173 Computer Security

Fall 2025 Syllabus

TR 3 - 4:15 pm Felgar Hall 0300

Course website: https://ywu960702.github.io/teaching

Instructor

Dr. Yi Wu (yi.wu-1@ou.edu)

Personal Website: https://ywu960702.github.io/

Office hours: Tuesday 1:00 – 2:00 PM or by appointment, DEH 210-G

Course Description

This course provides a comprehensive study of the fundamental concepts and principles of computer security. It covers core topics such as symmetric and public-key cryptography, digital signatures, cryptographic hash functions, authentication pitfalls, network security protocols, software security, and web security. In addition, the course explores emerging security challenges on the Internet of Things (IoT) and artificial intelligence (AI).

Prerequisites

Students are expected to enter this course with a basic knowledge of operating systems, networking, algorithms, and data structures. Also, students should be able to program in Java and C for the programming component of the projects.

Textbook

Wenliang Du. Computer Security: A Hands-on Approach, 3rd Edition, 2022.

Course Objectives

By the end of this course, students will be able to:

- Understand basic security terms such as plaintext, ciphertext, encryption/decryption, hash function, and authentication.
- Identify typical security pitfalls (including buffer-overflow vulnerability and web security vulnerability) in different applications.
- Determine appropriate mechanisms to protect computer and networked systems.
- Show hands-on skills in cybersecurity.
- Have a basic understanding of security and privacy issues in emerging technologies, including the Internet of Things (IoT) and machine learning.

Gradings

Quizzes * 5	10%
Labs * 3	30%
Final Project	25%
Midterm Exam	25%
Paper Presentation	10%

Grading scale: The scale for final letter grades is as follows, using standard notation for ranges: A (∞,90]; B (90,80]; C (80,70]; D (70,60]; F (60,0].

The instructor reserves the right to apply a grading curve if deemed appropriate.

Tentative List of Topics

- Basic security concepts
- Introduction to cryptography
- Identification and authentication
- Network security
- Software security
- Machine learning security
- IoT security

Policies on Late Assignments

For each day an assignment is late - up to a maximum of 2 days, the grade is reduced by 15%. For example, if you submit a 90%-correct assignment 2 days late, your assignment score will be 60%. If you submit it 3 days late, your assignment score will be 0.

Policies on Absences and Scheduling Makeup Work

There will be no makeup for homework assignments. Make-up exams will not normally be permitted. Exceptions will be made if a student presents a police report or a doctor's note that shows some emergency situation.

Academic Integrity

All students are expected to adhere to the University of Oklahoma's policies on academic integrity, as outlined in the Student Code. Any form of academic misconduct—including, but not limited to, plagiarism, cheating on assignments or exams, or facilitating academic dishonesty—will not be tolerated. For specific definitions, please visit https://www.ou.edu/integrity.

**Every part of this syllabus is subject to adjustment as the semester progresses.*