

CSE 565 B Computer Security (Fall 2023)

COURSE PIAZZA

All students must only use the course Piazza for any course-related issues. <https://piazza.com/buffalo/fall2023/cse565b>

UB Learns should be used only for checking the grades (and doing the AI Quiz) – all other materials such as syllabus, announcements, homework, and project assignments, as well as Q&As, are handled by Piazza only.

All questions/requests to the instructor, Tas, and Graders should be sent using Piazza (New Post and select Instructors only if this is a private post), and **not** via emails (which can be used as a secondary means if Piazza post didn't work).

TEACHING TEAM

Instructor:

- Xi Tan
Office: 309 Davis Hall, Buffalo, NY 14260
Office Hours: by appointment

Email: xitan@buffalo.edu

Teaching Assistants:

- Zheyuan Ma
- TBD

Email: cse-565b@buffalo.edu

TIME AND ROOM:

- Days & Times: Monday and Wednesday 6:30 PM – 7:50 PM
- Room: Knox 20, in person with recordings
- Q&A: Remote on Piazza/Zoom

COURSE DESCRIPTION

The objectives of this course consist of developing a solid understanding of fundamental principles of the security field and building knowledge of tools and mechanisms to safeguard a wide range of software and computing systems. The preliminary list of topics includes:

- Cryptographic background and tools;
- Access control;
- Authentication;
- Software security, malware;
- Internet security protocols and standards (SSL/TLS, IPsec, secure email);
- Intrusion detection and intrusion prevention systems (firewalls);
- Database security;
- Privacy;
- Identity management;
- Security management and risk assessment;
- Legal and ethical aspects (cybercrime, intellectual property)

At the end of this course, each student should be able to:

- Have a good overall picture of computer security in general.
- Have a rough idea of how various security mechanisms (hardware/software) work and what kind of attacks they can defeat.
- Start reading more advanced/research-oriented computer security materials.

PRE-REQUISITES

Students need to have some basic knowledge of operating systems, C programming language, data structures, and algorithms.

TEXTBOOKS

- **Highly recommended!** William Stallings and Lawrie Brown, Computer Security: Principles and Practice, 5th edition, Pearson, 2024 or 4th edition, Pearson, 2017.
- **Recommended!** Michael T. Goodrich and Roberto Tamassia, Introduction to Computer Security, Addison-Wesley, 2011
- Charles Pfleeger and Shari Pfleeger, Security in Computing.
- Charlie Kaufman, Radia Perlman, and Mike Speciner, Network Security: Private Communication in a Public World.
- Edward Skoudis and Tom Liston, Counter Hack Reloaded: A Step-by-Step Guide to Computer Attacks and Effective Defenses.
- Ross Anderson, Security Engineering: A Guide to Building Dependable Distributed Systems.

GRADING POLICIES

(Tentative and subject to change)

Each student must correctly answer all the questions in the AI Quiz before Fall Break (Oct. 9), in order to receive any final grade other than F. Each student will have an unlimited number of tries before the above stated deadline.

Assuming that the student answers all the questions in the AI Quiz correctly, then the overall score will be calculated based on the scores from the Homework, Survey, Lab, and Exam as follows:

- Midterm Exam (1): 20%
- Final Exam (1): 20%
- Assignments (4): 20%
- Survey Papers (2): 10%
- Projects (5): 30%

Homework/Projects should be done individually. The exam will contain several questions from the projects.

GRADING SCALE

Assuming that the student answers all the questions in the AI Quiz correctly before the deadline, and no AI violation has been discovered, then the final grade will be calculated based on the overall score as follows:

(Tentative and subject to change and curving):

A: top 15-20%

A-: next 10-15%

B+, B, B-: next 25-40%

C+, C, C-: next 10-20%

D and below: you don't want to know

Notes:

- We reserve the right to assign grades based on overall performance, taking into consideration the scores from different assignments and exams.

COURSE POLICIES

- **Late policy:** All assignments are due on the day and time posted.
 - You can submit an assignment up to 7 days late with a fixed daily penalty of 10% out of total points. Latest submission (7 days late) will receive at most 30% of max points even if it's all correct; 0 points if more than 7 days late.
 - **The workload is heavy, you should start the assignments early!** Excuses that you did not have enough time for an assignment will not be considered. Extraordinary circumstances will be considered at the discretion of the instructor (not the TAs!), contact the instructor via E-mails if you think these apply to you.

- Exams: If you miss an exam because of sickness or similar reasons, visit a physician and obtain a note detailing the period during which you were medically incapable of taking the exam. Notify the instructor immediately via e-mail or telephone (voice mail) if you are going to miss an exam before the exam takes place unless medically impossible. See the instructor as soon as you return to class. If you miss an exam without a valid excuse, you will receive a zero grade for that exam. No make-up exam will be available without a valid excuse.
- No extra work in the next semester will be given to improve your grade.

Regarding policy:

- Homework/Projects: Homework/project grades will be posted on UBLearn. You can look up graded homework/projects from the UBLearn. Questions about homework/report grades should be sent on piazza via private post within **one week** after the grade is posted on UBLearn. If you are not satisfied with the TA's response, you should contact the instructor no later than 3 days after the TA's response.
- Exams: Exams will **NOT** be returned. Exam grades will be posted on UBLearn, and you will be able to see your exam during the instructor's office hours. If you have questions about your grade, you should contact the instructor by email or during office hours within **the time period specified** after the grade is posted on UBLearn.
- No regrade requests will be considered after the deadlines mentioned above.

ACADEMIC INTEGRITY

- **No tolerance for cheating!**
 - Upon your **first** instance of academic integrity violation, you will receive a score of 0 for that assignment, and your final course grade will be lowered by one letter grade.
 - If a **second** violation occurs, you will NOT pass the course. Furthermore, the violation will be reported to the department, school, and university, and will be documented in your academic record.
 - Consult the Department and University Statements on Academic Integrity.
- Group study/discussion of the assignment at the conceptual level is encouraged, but the submission must be your own work.
- The AI Quiz must be completed and all questions must be answered correctly before the stated deadline to receive any grade other than F.
- Homework: Homework reports must be written up **individually**. Use of reference materials in the library or online is allowed, provided that the homework explicitly cites the references used. Note that copying the solutions from online sources or the previous semester is still considered cheating even if you cite the sources.
- Projects: Projects need to be done **individually**. Discussions of ideas are welcome, but exchanges of reports are not allowed.
- **Students who do share their work with others are as responsible for academic dishonesty as the student receiving the material.** Students are not to show work to other students, in class or outside the class. Students are responsible for the security of their work and should ensure that printed copies are not left in accessible places, and that file/directory permissions are set to be unreadable to others.
- Excuses such as "I was not sure" or "I did not know" will not be accepted. If you are not sure, ask the TAs and/or the instructor.
- Any student may withdraw their submission (homework, lab, projects) at any time, no questions asked, BEFORE any AI violation is discovered.

MEDICAL EMERGENCIES

Accommodations for medical emergencies will be made on a case-by-case basis. Requests for extensions based on medical emergencies must be accompanied by documentation of the emergency from student health services:

<http://www.buffalo.edu/studentlife/who-we-are/departments/health.html>.

We do NOT accept just the proof of the doctor's appointment as the accommodation request.

ACCESSIBILITY RESOURCES

If you have a diagnosed disability (physical, learning, or psychological) that will make it difficult for you to carry out the course work as outlined, or that requires accommodations such as recruiting note-takers, readers, or extended time on exams or assignments, please advise the instructor during the first two weeks of the course so that we may review possible arrangements for reasonable accommodations. In addition, if you have not yet done so, contact: <https://www.buffalo.edu/studentlife/who-we-are/departments/accessibility.html>.