CS 558 Introduction to Computer Security
Spring 2024

Course Information

Instructor: Xin Zhang
Credits: Guanhua Yan

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Locations and Times

- Instructor: Xin Zhang
- Meetings: MWF 12:00PM – 1:00PM,
- Instructor office hours: MW 1:15 PM – 2:15 PM
  - Zoom https://binghamton.zoom.us/my/xzhang99
  - In-Person
  - Or by appointment
- Email: xzhang99@binghamton.edu
- TA: Yuqiao Meng
- TA office hours: M 3:00 PM – 4:00 PM, F 5:00PM – 6:00PM
- TA Email: ymeng15@binghamton.edu

What is this class about?

- Introduction to the broad field of computer security
- Principles of computer security
  - Information security goals
- Cryptography
  - Symmetric key crypto, public key crypto, hashing
- System security
  - Authentication, authorization, trusted computing
- Software security
  - software vulnerabilities, software vulnerability discovery, malware, malware analysis
- Web security
  - SQL injection, XSS and CSRF, Clickjacking and phishing
- Network security
  - Authentication protocols, real-world security protocols such as SSH, SSL/TLS, Kerberos, and IPSec

What will you get from this class?

- Equip you with the security mindset
  - Think like attackers
    - What would an attacker do
    - To anticipate attackers
  - Defend against attackers
    - Enforce security principles to your system

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Prerequisites & Recommended Books

- Programming experience with C/C++, Python and Java
- Information Security: Principles and Practice by Mark Stamp

Course Schedule

- A schedule table will be posted on Brightspace
  - Under Content → Syllabus/Overview → Click the link “click here to see the course schedule page”
- Lecture slides, due dates of homework assignments and programming projects will also be updated in the schedule table

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Grading

Component	Weight
Written assignments	15%
4 Programming projects	40%
Mid-term exam	20%
Final exam	20%
Attendance and participation	5%

- After the semester, a final raw score will be calculated for each student

$$\sum_{\forall components} (\frac{Your\ points\ of\ the\ component}{Full\ points\ of\ the\ component} \times weight\ of\ the\ component)$$

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Grading

- The raw final score will be curved based on the overall score distribution of the class. The letter grade will be determined based on the curved scores
  - In other words, the final letter grade will reflect the ranking of your raw final score within the whole class
- The instructor reserves the right to make small and fair adjustment to the final letter grades based on students' efforts and overall performances
- But once the letter grades are assigned, there will be no change unless grading error(s) happened

Written Assignments

- Several individual written assignments throughout the semester
- Each homework covers a certain category of topics we discuss in the lectures and will be handed out to students after we finish the related lectures
- Each assignment will be in the form Q&A

Programming Projects

- Students need to complete 4 *individual* programming projects
- Like the written assignments, each project will also cover a certain category of topics we discuss

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Late policy

- All the homework assignments and projects should be submitted before the due date to avoid late submission penalties
- 10% for each of the first two days late
- 20% for each of the days thereafter
- Extenuating circumstances may warrant an extension, but please discuss with instructor well ahead of time instead of at the last minute or after the due date

Collaboration Policy

- Both homework and projects should be completed on your own
- Sharing or copying code is strictly prohibited. An automated tool will be used to check code similarity
  - Once detected, you and your friend will both get 0 credit
- Violations are subject to the penalty as described in the Watson School Student Academic Honesty Code

Academic Honesty Code

- All the students should read the CS Faculty Letter to Students Regarding Academic Honesty
- All the students should follow the Student Academic Honesty Code by the Watson School
- Dishonesty and cheating in all academic work related to this course, when discovered, will result in **zero credit** for the work, plus further penalty defined by the university policy

Demo Policy

- If your programming assignment needs a demo, TA will contact you via email for an appointment
- Please make an appointment with the TA for the demo before the time specified by the TA
- Please go to the appointment on time

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Homework Submission

- The Brightspace system will be used for both homework and project submissions
- The submission page will be closed after the due date
  - Submit before midnight(11:59pm)
- If you need to submit a late homework assignment or project, email it to the instructor and state in the email how many days you are late
- Appealing Grades
  - Within 7 days of completion of grading

Two Exams

- Mid-term Exam
  - Contents from lectures till mid-term
- Final Exam
  - Contents from lectures after mid-term
- The questions of the exam will be similar to the ones we have in written assignments
- Students are permitted to bring their own materials in paper form; however, electronic devices are strictly prohibited.

Attendance

- Students are required to attend each lecture as scheduled
- Throughout the semester, students are allowed to use up to **five** “flex days” in which their absence will be excused
- Extended absences should be notified to the instructor before the absence is taken

Attendance

- Attendances will be taken in the form of pop-up (i.e., unannounced) quizzes
- The quizzes will
  - let the instructor know who is attending the class
  - help the instructor to assess students' understanding of topics
  - **not** be graded
- **Important**: Taking attendance quizzes while absent from class is an act of academic honesty violation. Such a violation, once detected, will lead to zero credit in the "attendance" grading component.

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Managing Stress

- Seek support as soon as possible If you are experiencing undue personal or academic stress
- Talk to me about your stress about the class
- Campus resources
  - Dean of Students Office / CARE Team: 607-777-2804
  - University Counseling Center: 607-777-2772
  - Interpersonal Violence Prevention: 607-777-3062
  - Office of International Student & Scholar Services: 607-777-2510

Practice Environment

- CS department machines
  - ssh “your_user_name”@remote.cs.binghamton.edu
- PC
  - Virtualbox
  - VMware Workstation Player
- MacOS
  - Virtualbox
- Please refer to the TA if you got questions regarding programming environment

Miscellaneous

- Light laptop/tablet use in class is allowed. But it should not affect other students and the instructor
- Please do not publish your programming assignment code online

Questions?

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