

CSE 543 Information Assurance and Security

Spring 2023

3:00 p.m. - 4:15 p.m.

Monday and Wednesday

Classroom: COORL1-20 (Tempe)

Contact Information

Instructor: Professor Stephen Yau

Office: BYENG 488

Email: yau@asu.edu

Course Objectives

A **core course** of our Cybersecurity Concentration Programs in Computer Science and Cybersecurity Specialty in Software Engineering at the graduate level.

This course will provide students with a comprehensive understanding of the problems of information assurance (IA) and security, possible solutions to these problems, especially the security of information systems and operating environments. This course will also focus on the IA technology as well as IA policy, management, legal and ethical issues.

Topics

A. Basic Concepts and Techniques:

- IA overview: concepts, trends, and challenges
- Security and privacy principles and strategies
- Mission assurance
- Authentication and access control mechanisms
- Physical and personnel security
- Applications of cryptography and Formal Methods in IA
- Blockchain and machine learning in cyber security applications
- Malware
- IA in outsourcing, and open-source software
- IA in cloud computing, edge computing, and IoT
- IA in service computing

- IA in social computing

B. IA Policy, Management, Legal and Ethical Issues:

- IA policies
- Administrative security controls
- IA risk analysis and management
- Contingency and disaster recovery planning
- IA management, evaluation, certification, and accreditation
- Laws and Related Issues of IA

Prerequisite

Knowledge of information systems, computer networks and their operations.

Expected Learning Outcomes

After completing this course, students are expected to have the following background and capabilities:

- 1) Understand the major issues, problems, and possible solutions in Information Assurance and Security.
- 2) Learn security of information on computer and computer networks.
- 3) Understand IA policies, management, legal, and ethical issues.
- 4) Build capability to collaborate and work on a group course project.
- 5) Understand emerging topics in Information Assurance such as blockchain

Grade Policies

The grading will be based on the relative performance of students in the class.

Examinations, course project, references

- Two examinations to evaluate the understanding of the topics covered and discussed in the class (60%).
- One group course project (40%): Each group course project will be an in-depth study on an IA topic approved by the instructor. The group will be required to submit a final report, present and discuss the results in class.

Recommended References

- M. E. Whitman and H. J. Mattord, *Principles of Information Security*, 6th edition, Thomson Course Technology, 2018
- Current literature

Academic Integrity

Students in this class must adhere to ASU's academic integrity policy, which can be found at <https://provost.asu.edu/academic-integrity/policy>). Students are responsible for reviewing this policy and understanding each of the areas in which academic dishonesty can occur. In addition, all engineering students are expected to adhere to the ASU Academic Integrity [Honor Code](#). All academic integrity violations are reported to the Fulton Schools of Engineering Academic Integrity Office (AIO). The AIO maintains record of all violations and has access to academic integrity violations committed in all other ASU college/schools.

Specific academic integrity announcements for this class are... [* When discussing sanctions please use language like, *recommended sanctions for these violations will be...*this allows for the fact that the AIO may want to discuss the sanction with you to keep it within our sanctioning guidelines and the AIO may often need to increase the penalty because of a history of multiple violations by a student.

Student Copyright Responsibilities

You must refrain from uploading to any course shell, discussion board, or website used by the course instructor or other course forum, material that is not the student's original work, unless the student first complies with all applicable copyright laws; faculty members reserve the right to delete materials on the grounds of suspected copyright infringement.

The contents of this course, including lectures and other instructional materials, are copyrighted materials. Students may not share outside the class, including uploading, selling or distributing course content or notes taken during the conduct of the course. Any recording of class sessions is authorized only for the use of students enrolled in this course during their enrollment in this course. Recordings and excerpts of recordings may not be distributed to others. (see [ACD 304-06](#), "Commercial Note Taking Services" and ABOR Policy [5-308 F.14](#) for more information).

Policy against threatening behavior, per the Student Services Manual, SSM 104-02

Students, faculty, staff, and other individuals do not have an unqualified right of access to university grounds, property, or services (see [SSM 104-02](#)). Interfering with the peaceful conduct of university-related business or activities or remaining on campus grounds after a request to leave may be considered a crime. All incidents and allegations of violent or threatening conduct by an ASU student (whether on- or off-campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students.

Disability Accommodations

Suitable accommodations are made for students having disabilities. Students needing accommodations must register with the ASU Disabilities Resource Center and provide documentation of that registration to the instructor. Students should communicate the need for an accommodation in enough time for it to be properly arranged. See [ACD 304-08](#) Classroom and Testing Accommodations for Students with Disabilities.

Harassment and Sexual Discrimination

Arizona State University is committed to providing an environment free of discrimination, harassment, or retaliation for the entire university community, including all students, faculty members, staff employees, and guests. ASU expressly prohibits discrimination, harassment, and retaliation by employees, students, contractors, or agents of the university based on any protected status: race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, and genetic information.

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/faqs>.

As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating

violence. ASU Counseling Services, <https://eoss.asu.edu/counseling> is available if you wish to discuss any concerns confidentially and privately. ASU online students may access 360 Life Services, <https://goto.asuonline.asu.edu/success/online-resources.html>.