Instructor: Qi Cheng (qcheng@ou.edu)

Class time and location: Carson Engr Ctr (CEC 0441) 09:00 AM - 10:15 AM (TR)

Office hours: T 1:30-3 W 10:30-12 (@DEH 254)


Prerequisite: CS 3113

Course Website: https://canvas.ou.edu

Catalog Description: An introduction to computer security. Topics include applied cryptography, access control, programming and software security, operating system security, network security protocols, and the legal and ethical aspects of security software.

Course Coverage:
1. Principles and concepts in computer security.
2. Symmetric key cryptosystem:
   - Historical and modern ciphers, frequency attack, known plaintext attack, chosen plaintext attack and chosen ciphertext attack.
3. Hash functions:
   - Birthday attack, MD5, SHA1, SHA2 and SHA3.
4. Public key cryptosystem:
   - Diffie-Hellman key exchange, RSA, and digital signature.
5. Access control:
   - User authentication, password security, two-factor authentication and biometric authentication.
6. Kerberos system.
7. Secure Email and P.G.P.
8. IP level Security.
10. Software and programming security:
    - Virus, buffer overflow, code injection, denial-of-service, and the zero-day attack.
11. Operating system security:
    - Protection domain, Unix/Linux security, and many attacks and defenses on operating system.
12. Legal, ethical and privacy issues:
    - Social engineering attack and defense.
Grading:

- Attendance/Participation (10%),
- Assignments/Presentations (30%),
- one midterm project (30%)
- and the final exam (30%).

Students enrolled in the graduate level course are required to present current literature on computer security topics.

Accommodation: The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities. Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in Goddard Health Center, Suite 166, phone 405/325-3852 or TDD only 405/325-4173.

Academic Misconduct Policy: Integrity in all aspects of scholarship is essential to the University’s mission. The Academic Misconduct Code sets forth the rights and responsibilities of all students on the Norman Campus regarding academic integrity, and provides the procedures to be followed in cases of suspected misconduct. Academic misconduct is defined as any act which improperly affects the evaluation of a students academic performance or achievement. It specifically includes cheating, plagiarism, fabrication, fraud, destruction of property, and bribery or intimidation, as well as assisting others or attempting to engage in such acts. It is the responsibility of each student to be familiar with the definitions, policies and procedures concerning academic misconduct; unfamiliarity with the code alters none of a students rights or responsibilities thereunder. The Academic Misconduct Code is printed with the Student Code and is also available at [Academic Misconduct Code (PDF)].

Religious Holidays: It is the policy of the University to excuse the absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required classwork that may fall on religious holidays.

Adjustments for Pregnancy/Childbirth Related Issues: Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as soon as possible to discuss. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Please see [http://www.ou.edu/content/eoo/pregnancyfaqs.html] for commonly asked questions.

Title IX Resources: For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on-call 24.7, counseling services, mutual no contact orders, scheduling adjustments and disciplinary sanctions against the perpetrator. Please contact the Sexual
Misconduct Office 405-325-2215 (8-5) or the Sexual Assault Response Team 405-615-0013 (24.7) to learn more or to report an incident.