Syllabus

CSCD/CYBR 434/534-040 Network Security, Winter (2025)

Class: Mon - Wed 10-10:50. ***Lab:*** Thu 1-2:50

Description

This course explores practical topics in network security. Topics include policy and mechanism; malicious code; intrusion detection, prevention, response; cryptographic and protocols for privacy and integrity. This course emphasizes the trade-offs among risks of misuse, cost of prevention and social issues. Concepts are implemented in programming assignments and comprehensive projects.

NOTE: You must be enrolled in CSCD 434L/534L the co-requisite lab course.

What it really means

Network security is eclectic and is composed of the amalgamation of many security topics. We'll cover many such topics, their interactions, and how they pertain to network security.

We'll cover fundamental concepts in networking security . Including a technical overview of common attacks (MITM, DoS, remote buffer overflows, etc.) and scans (network mapping, idle scans, etc.). Programming projects are required.

Course Textbook

No official textbook.

Assigned readings will be made available via canvas.

Hacking The art of exploitation by Jon Erickson, is a good book though.

So is Matt Bishop's *Introduction to Computer Security.*

For encryption, see Bruce Schneier's books *Cryptography Engineering* and *Applied cryptography.*

Instructor information

Instructor: Antonio Espinoza (he/him)

Office: CAT 338

Office hours: Tuesday 2:00-3:00, Friday 12:00-1:00 and by appointment.

Email: aespinoza17@ewu.edu

Note: Please email me directly, **NOT through CANVAS**.

534/Graduate students

A portion of your grade will be from a lecture you will give. Each graduate student taking 534 will need to pick a topic and give a full class lecture on it including at least 1 demonstration (e.g., a live demo of an attack). This will contribute to your lab and homework grade.

You must pick a topic by the end of week 2 and schedule your presentation. It is up to you to see me in office hours or schedule an appointment.

Tentative topic schedule

Week	Topics/Labs
1	Introduction
	Lab 1 - Networking command line tools
2	Man in the middle
	Lab 2 - Scapy MITM attack
3	Encryption
	Lab 3 - RSA encode, decode and crack
4	Network scanning
	Lab 4 - Multi-VM setup
5	Remote attacks
	Lab 5 - Identifying VMs by IPIDs
	Midterm Feb, 5
6	Packet analysis
	Lab 6 - Examine Great Cannon logs
7	Zeek/Bro
	Lab 7 - Identify quantum insertion
8	Defense
	Lab 8 - Binary rewriting a C executable
9	Special topics
	Lab 9 - Identifying HTTPS pages from metadata
10	Android Reverse Engineering
	Lab 10 - Honeypots
11	Review etc.
	Finals week
Final	Mar 19, 10:30 - 12:30

Grading

There is a single grade for the lecture and lab portion of this course (i.e., you will get one combined grade taking into account both the lab and lecture).

Grade Distribution

Type	Percent of Final Grade
Labs	60
Midterm + Final	30
Homework	10

The midterm and final may be tests or projects.

Letter Grade Conversion

Percent	Grade
92 - 100	A
89 - 91	A-
86 - 88	B+

Percent	Grade
83 - 85	B
78 - 82	B-
75 - 77	C+
71 - 74	C
68 - 70	C-
65 - 67	D+
62 - 64	D
59 - 61	D-
< 59	F

General Policies

Lectures

If you choose not to come to class then please do not use office hours as a substitute for not attending lectures. Those that attend regularly and participate in class discussion will be rewarded accordingly when final grades are calculated! Classroom activities will complement, not necessarily duplicate, the text. Furthermore, you are accountable for material covered in class, so you miss class at your own risk!

Exams

No makeup exams are given without prior arrangements or in the case of a ***documented*** emergency after the fact. Exam dates are provided at least a week before they occur, and review sessions may occur preceding each exam.

Homework/Labs:

Homework, labs, and assignments will be in the form of; programming projects in class labs, written assignments, *etc.*

- **All written assignments must be in PDF format**.
- You have 2 free late days, use them wisely!
- Assignments are due by the required time ***on the due date***. Late assignments ***WILL NOT*** be accepted (unless using late days). Do not email me the code, do not post it in Canvas as a comment, just turn your stuff in on time or earlier. You can submit multiple times and we will grade the last submission. In the case of a documented emergency, the instructor reserves the right to accept late work. A doctor's note may not be considered a documented emergency.
- You must submit all files such that your code can be compiled. If your code does not compile because you did not provide the correct/complete files, then you will receive a maximum of 5 points.
- Incomplete submissions/non-compiling code/unreadable PDF files/etc... will not be accepted. Ensure everything is correct before you submit, and all required files are included. You will receive a score of a 0 for incomplete submissions/non-compiling code/unreadable PDF files/etc.
- If the grader/the instructor make a mistake you must discuss the mistake with the instructor immediately.

Final Grade

Your final grade will be calculated based on the percentages described above.

Preparation

You are expected to read assigned material before it's discussed in class. Examples given in class and by the authors should be confirmed by the student, to guarantee complete understanding of the subject.

Academic Integrity Policy

Students are expected to uphold a code of ethics and professional behavior that promotes the highest standards of integrity, honesty, trustworthiness, and professionalism when exploring cybersecurity-related topics and exercises.

Students are required to sign the NCAE-C Student Code of Ethics and Professional Conduct during the first week of class to proceed in the course. Copies are available by emailing kriddle2@ewu.edu.

Academic Integrity is the cornerstone of the university. Any student who attempts to gain an unfair advantage over other students by violating the Academic Integrity policy may be reported to the university and may receive a sanction up to and including XF for the course, suspension, or expulsion from the university. This policy is on the EWU web site. https://inside.ewu.edu/policies/knowledge-base/wac-172-90-student-academic-integrity-3/

Examples of academic dishonesty include misrepresenting others' work as your own, failure to provide proper citations in written text, stealing or destroying material intended for the use of other students, using notes or cell phones during exams, taking photographs of exams, assisting others during exams, copying someone else's work, letting his or her work be copied, and sharing course content without permission.

Cheating Policy

You are allowed to discuss your thoughts with and help other classmates; however, you must do your own work, meaning ALL work should be your own. Plagiarism and cheating **WILL NOT BE TOLERATED**. Plagiarism includes using someone else' programs or parts of programs as your own; copying another person's work; handing in another person's work for your own. If you work with someone else to understand the content, it is important that each person does the assignment separately. Should any of your work be duplicated from another person or any other source, you will be asked to leave the class and not return. Your final grade will be 0.0. Any infractions will be handled in accordance with the academic integrity policy of Eastern Washington University.

Americans with Disabilities Act

Eastern Washington University is committed to providing support for students with disabilities. If you are a student with physical, learning, emotional, or psychological disabilities needing an accommodation, you are encouraged to stop by Student Accommodation and Support Services (SASS), HAR 019 or call 509-359-6871.

Religious Accommodations

If you would like to request an accommodation for reasons of faith or conscience, please refer to EWU's policy on Holidays and Religious Accommodations available at https://inside.ewu.edu/policies/. Accommodations must be requested within the first two weeks of this course using the Holidays and Religious Accommodations Request form available at https://inside.ewu.edu/student-life/resources/holidays-and-religious-accommodations-request/.

Equal Opportunity

Eastern Washington University does not discriminate in its programs and activities on the basis of race, color, creed, religion, national origin, sex, pregnancy, sexual orientation, gender identity/expression, genetic information, age, marital status, families with children, protected veteran or military status, HIV or hepatitis C, status as a mother breastfeeding her child, or the presence of any sensory, mental, or physical disability or the use of a trained guide dog or service animal by a person with a disability, as provided for and to the extent required by state and federal laws.

EWU Title IX Policy

Eastern Washington University recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct will NOT be tolerated at EWU. If you have been subjected to sexual misconduct, we encourage you to report this matter promptly. As a faculty member, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct I must report the matter to the Title IX Coordinator. Should you want to report to a confidential source you may contact the following:

- Sexual Assault Family Trauma (SAFeT) – 509-624-7273 – 24 hours
- YWCA Domestic Violence Crisis Line – 509-326-2255 – 24 hours
- Suicide and Mental Health – 509-838-4428 – 24 hours
- Employee Assistance Program (EAP) – 360-407-9490 (employees)
- Counseling and Psychological Services (CAPS) – 509-359-2366 (students)