

# **CSC 5290 - Cyber Security Practice**

**Instructor:** [Rhongho Jang \(CS, Wayne State University\)](#)

**Time:** Every Fall, TT 2:30 PM~ 3:45 PM

**Office Hours:** Thursday 3:45 PM~4:45 PM

## **Course Description**

This course will explore board security topics in the areas of network and operating systems. In particular, this course focus on providing hands-on experience leveraging various security tools, aiming to help students understand real-world security threats. It will cover both offensive and defensive methods in a laboratory environment. Students are expected to finish lab assignments using real-world exploits and defense tools.

## **Course Objectives**

This course offers an in-depth experience of security threats and defenses. Upon successful completion, you will:

- Understand security vulnerabilities, exploits, and defenses
- Experience security-related network and system experiments through hands-on labs.
- Learn real-world security issues and their solutions

## **Prerequisites**

CSC 4420 or EET 5720 with a minimum grade of C-, grad, or permission of the instructor.

## **Textbook**

No textbook is required for this course.

## **Computer Programs**

You will need a desktop/laptop to complete the home lab/assignments.

## **Topics include but are not limited to**

- T1: Packet Sniffing and Wireshark
- T2: Network Attacks
- T3: Buffer Overflows and Defense
- T4: Scanning and Reconnaissance
- T5: Public Key Cryptography
- T6: Hardware security
- T7: Metasploit Framework
- T8: Reverse Engineering and Obfuscation
- T9: OS Security for the Internet of Things
- T10: Wireless Exploitation & Defenses
- T11: Firewalls & Intrusion Detection Systems (IDS)
- T12: Dirty COW Attack
- T13: Format-String Vulnerability

- T14: Web Security: The Heartbleed Bug and Attack
- T15: Return-to-libc and Return Oriented Programming
- T16: Blockchain
- T17: AI security

### **Grading**

1x Participation and discussion 10%  
 2x Quizzes 30% (15% for each)  
 10x Lab Assignments 40% (4% for each)  
 1x Term Project 20%

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Total: 100%

### **Scaling**

A	90-100%	C	70 - 73%
A-	87-89%	C-	67 - 69%
B+	84 - 86%	D+	64 - 66%
B	80 - 83%	D	60 - 63%
B-	77 - 79%	D-	57 - 59%
C+	74 - 76%	F	0 - 56%

**More About Term Project:** You will need to bring your own ideas/implementations (BOYI) to defeat known attacks. Important deadlines:

4<sup>th</sup> ~ 5<sup>th</sup> week: The proposed or selected topics/attacks must be approved by the instructor

7<sup>th</sup> ~ 8<sup>th</sup> week: A one- or two-page summary of the project, including the initial idea, identified challenges, and plans, should be submitted to Canvas.

12<sup>th</sup> week ~ end: A presentation with a demo is required for final evaluation.

### **Academic Dishonesty: Plagiarism and Cheating**

All forms of academic misbehavior are prohibited at Wayne State University. Refer to the [Student Code of Conduct](#).

### **Student Disability Services**

If you have a documented disability that requires accommodations, you should register with Student Disability Services (SDS) to coordinate your academic accommodations.

Link: <https://studentdisability.wayne.edu/>.

Phone: (313) 577-1851 | Videophone: (313) 202-4216 | Fax: (313) 577-4898

### **Other Issues**

Should you have any questions or issues, please contact the instructor in advance.