Network Security — CPS 593
Fall 2025 (3 Credits)

INSTRUCTOR INFORMATION

Instructor: Kaitlin Hoffmann
Email: hoffmank4@newpaltz.edu

Lecture Location: LC 113
Lecture Hours: Once a Week Mon or Thurs 5 - 6:15 PM (See schedule on last page)
Office Hours: Monday 1:15 - 3:15 PM. Tuesday 2:45 - 4:45 PM.
Office Location: SH 243 (If I'm not in there, check SH 260, the glass room)

COURSE DESCRIPTION

Students will learn network security practices and technologies to protect a computer network and its data from unauthorized access, misuse, modification, or denial of service. Students will implement various measures to ensure the confidentiality, integrity, and availability of network resources and information using virtual machines and NMap. Measures learned by students include the use of firewalls, encryption, access control mechanisms, intrusion detection systems, and regular security audits.

COURSE OBJECTIVES

- Introduce students to the foundational principles of network security, including threat modeling, attack vectors, and security frameworks.
- Equip students with the knowledge and practical skills to utilize Nmap for network discovery, vulnerability assessment, and security auditing.
- Teach students the principles of firewall operation, including rule creation, network segmentation, and the implementation of firewall policies to protect against unauthorized access.
- Instruct students on the deployment and management of Intrusion Detection Systems (IDS), focusing on real-time network monitoring, detection of suspicious activities, and incident response.
- Familiarize students with the stages of the Cyber Kill Chain and how to apply it in identifying and mitigating threats within a network environment.
- Provide practical experience in using various network security tools, enhancing students' ability to assess, defend, and secure network infrastructures.

STUDENT LEARNING OUTCOMES

By the end of this course, students will be able to:

- Explain the essential concepts in network security, including threats, vulnerabilities, and protective measures.
- Perform comprehensive network scans to discover hosts, services, and potential vulnerabilities using Nmap, and interpret the results for security analysis.
- Create, configure, and manage firewall rules to control network traffic and protect against intrusions, ensuring secure network communication.
- Install and configure Intrusion Detection Systems (IDS) to monitor network traffic, detect malicious activities, and respond to security incidents.
- Apply the Cyber Kill Chain model to analyze and understand security incidents, and develop strategies to disrupt each stage of a cyberattack.

E-MAIL AND BRIGHTSPACE

E-mail and Brightspace are primary means of communication between the instructor and the students. Receiving and reading course email, as well as periodically checking Brightspace, is ***your responsibility***.

E-mails will be answered within 24 hours Monday thru Friday. Emails will not be answered Saturday and Sunday. Please do not re-send the same, or variation of the same, email expecting me to respond faster. **The best time to reach me is Monday thru Thursday**.

TEXTBOOK (Optional) and REQUIRED RESOURCES

The textbook below is not required, but I will use it as a reference for some of the topics.

Textbook: *Computer Security: A Hands-On Approach*, by Dr. Wenliang Du, 2022, 3rd edition (ISBN: 978-17330039-4-0). The course will use the SEED (Security Education) Labs associated with the text – which requires the free VirtualBox virtualization software to be installed on your laptops.

TryHackMe: https://tryhackme.com/ A free online platform for learning cyber security, using hands-on exercises and labs.

Laptops: A computer (Windows, Linux, Mac) is required for the course. You'll use it for lab exercises in class and at home.

VirtualBox or VMware Fusion: An open source virtualization software package which you will run on your own laptop, available at virtualbox.org. More on this later.

EVALUATION PROCEDURES AND CRITERIA

Progress in the course will be reflected in assignment, discussion boards, and exam grades covering the subject areas of the course.

- Assignments 20%
- Quizzes: 20%
- Project: 20%
- Midterm: 20% **October 9th 5 - 7 PM**
- Final Exam: 20% **December 15th 5 - 7 PM**

Grade Scale (by percentage)

A	100 – 93	A-	92.9 – 90
B+	89.9 – 87.5	B	87.4 – 82.6
B-	82.5 – 80	C+	79.9 – 77.5
C	77.4 – 72.6	C-	72.5 – 70
D+	69.9 – 67.5	D	67.4 – 62.6
D-	62.5 – 60	F	Below 60

Last day to DROP a course without "W" grade or fee for Fall 2025 is 09/07. Last day to request Course Withdrawal is 11/14.

ASSIGNMENTS/LABS

Assignments are assigned each week and due the following week once the next module is released. All assignments can be found and submitted on Brightspace under its respective module folder.

RESEARCH PROJECT

You will each be assigned a network security topic that you will have to research (you may change the topic to something that interests you with my permission). Your submission will be due **12/04**. Everything MUST be cited, and any blatant copying from online sources or AI will result in an automatic 0. More detailed information and a rubric will be posted after the midpoint of the semester.

EXAMS

There will be two exams: a midterm and a final exam. Exams will be a combination of multiple choice and short answer. You may bring one 8 by 11 sheet of paper written with any handwritten notes you would like.

QUIZZES

Every week we meet, there will be a short multiple choice quiz proving that you watched the video lecture and read all necessary notes and readings. Quizzes should be relatively easy if you prepare. The **lowest 3 quiz grades will be dropped** in case you need to miss class. No make up quizzes will be offered unless you have a valid reason.

DUE DATES & LATE POLICY

Unless due to an emergency, assignments are due as indicated on Brightspace and will **not be accepted** after the due date.

HOW THE COURSE WORKS

The course will be organized in a new module every week (There will NOT be a module the week of Thanksgiving, and the last week of classes to allow you to work on your research project). Each module will contain a video lesson, a PowerPoint, and an assignment. Modules will be released every Monday. Everything can be found via Brightspace. It is YOUR RESPONSIBILITY to read over the lecture and watch the presentation before coming to class. Class time will be used to show demos, review and work on labs. Be sure to bring a laptop to class. You may work with one other student in the class, but all submissions must be your own.

CAMPUS-WIDE POLICY STATEMENTS

Academic integrity policy statement: Students are expected to maintain the highest standards of honesty in their college work. Cheating, forgery, and plagiarism are serious offenses, and students found guilty of any form of academic dishonesty are subject to disciplinary action. New Paltz's policy on academic integrity is found at **www.newpaltz.edu/ugc/policies/policies_integrity.html**, and several excellent resources to help with avoiding plagiarism are available on the Sojourner Truth Library's website: **lib.newpaltz.edu/assistance/plag.html**.

Reasonable accommodation of individuals with disabilities statement: Students needing classroom and/or testing accommodations related to a disability should contact the Disability Resource Center (Student Union, Room 210, 845-257-3020) as close as possible to the beginning of the semester. The DRC will then provide students' instructors with an Accommodation Memo verifying the need for accommodations. Specific questions about services and accommodations may be directed to Deanna Knapp, Assistant Director (**knappd@newpaltz.edu**) or Jean Vizvary, Director (**vizvaryj@newpaltz.edu**).

Veteran & Military Services statement: New Paltz's Office of Veteran & Military Services (OVMS) is committed to serving the needs of veterans, service members and their dependents during their transition from military life to student life. Student veterans, service members or their dependents who need assistance while attending SUNY New Paltz may refer to **www.newpaltz.edu/veterans**; call 845- 257-3120, -3124 or -3074; e-mail **np-vms@newpaltz.edu**; or stop by the Student Union, Room 100 South.

Computer and network policies statement: Users of New Paltz's computer resources and network facilities are required to comply with the institutional policies outlined in the Acceptable Uses and Privacy Policy, available at **www.newpaltz.edu/itpolicy/**.

Identity verification policy statement for online courses: New Paltz's Online Identity Verification Policy is designed to verify that students enrolled in our online courses and/or programs are the ones who take the courses, complete the programs, and receive the academic credit.
See **www.newpaltz.edu/ugc/policies/policies_onlineverification.html** for the complete policy.

STUDENT EVALUATION OF INSTRUCTION

You are responsible for completing the Student Evaluation of Instruction (SEI) for this course and for all your courses with an enrollment of five (5) or more students. I value your feedback and use it to improve my teaching and planning.

Network Cybersecurity
Fall 2025 Outline

Date	Topics
Week 1 08/25 - Meeting Monday	• Syllabus • Introduction • Networking Basics
Week 2 09/04 - Meeting Thursday	Cyber Kill Chain
Week 3 09/11 - Meeting Thursday	Reconnaissance
Week 4 09/18 - Meeting Thursday	Nmap
Week 5 09/25 - Meeting Thursday	Nmap Continued
Week 6 10/02 - Meeting Thursday	Firewalls Review
Week 7 10/09 - **Midterm Thursday**	Intrusion Detection Systems
Week 8 10/16 - Meeting Thursday	Intrusion Detection Systems Continued
Week 9 10/23 - Meeting Thursday	Cryptography
Week 10 10/30 - Meeting Thursday	Secure Network Architecture
Week 11 11/06 - Meeting Thursday	Security information and event management

Date	Topics
Week 12 11/13 - Meeting Thursday	Incident Response and Management
Week 13 11/20 - Meeting Thursday	Pentesting
Week 14 11/27 - **NO MEETING THIS WEEK (Thanksgiving)**	Happy Thanksgiving! Work on Project
Week 15 12/02 - Meeting Thursday	TBD Work on Project
Week 16 12/04 - **LAST Meeting Thursday**	Review **Project Due 12/04**
Week 17 12/15	**FINAL EXAM:** **Monday, December 15th 5 - 7 PM**

******Syllabus and Course Outline subject to change at instructor's discretion. You will be notified and held accountable for any changes to the syllabus.***