Course Syllabus

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NET 4740 Security Vulnerabilities and Intrusion Mitigation | Fall 2020

Instructor:	Matt Paulson
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Office Hours:	TBD
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My preferred method of contact is email. I respond to weber.edu email or Canvas conversations. Please give me 24-48 hours for a reply to your message. I do not generally check email on weekends or holidays, so please plan accordingly.

You may also call me at my office phone during my office hours.

Course Overview

Welcome to Security Vulnerabilities and Intrusion Mitigation! This course is taught face-to-face meaning we will meet in class during each scheduled session. Also, this course utilizes WSU's online learning environment, called Canvas, to complement the face-to-face sessions. All course documents and resources are available through Canvas, and all coursework and learning activities (unless otherwise stated) will be submitted via Canvas.

Course Description

A treatment of security issues related to computers and computer networking. This course is designed for advanced users, system administrators, and network administrators. The course covers TCP/IP security issues, security policies, packet filtering, Internet firewall architecture and theory, detecting and monitoring unauthorized activity, password authentication, intrusion detection and prevention and other security issues involving Linux, UNIX, and Microsoft

Windows operating systems.

Course Outcomes:

- Define security in terms of risk assessments and threat models.
- Contribute meaningful discussion of ethical issues involving cybersecurity
- Conduct a limited penetration test staying within the allowed bounds
- Secure a system under different threat models

LEARNING RESOURCES

Textbook & Reading Materials

There is no required text for this class. An optional and very informative text is Counter hack reloaded : a step-by-step guide to computer attacks and effective defenses / Ed Skoudis with Tom Liston.—2nd ed. ISBN 0-13-148104-5

Canvas

Canvas is where course content, grades, and communication will reside for this course.

- https://weber.instructure.com
- For Canvas-related technical support, please click the HELP link in the top right corner of your screen.
- You can also call WSU Online at (801) 626-6499 or email **wsuonline@weber.edu (mailto:wsuonline@weber.edu)**
  - Your **username** is your **W#**, and your **password** is your password (the same one you use for the eWeber portal).
- For **Passwords (http://www.weber.edu/help)** , or any other computer-related technical support contact the **IT Service Desk (http://www.weber.edu/help)** .
  - (801) 626-7777
  - 1-800-848-7770 - option 2 - ask for extension 7777
  - **http://www.weber.edu/help (http://www.weber.edu/help)**
  - **csupport@weber.edu (mailto:csupport@weber.edu)**

LEARNING ACTIVITIES

Modules

Your learning activities are contained in the class modules. Please refer to them often to access the required readings, videos, and assignments.

Assignments

All assignments will be submitted via Canvas. You will be presented with tasks to accomplish, and you will submit the results of those tasks.

All assignments are due as noted in the assignment. Late assignments will be accepted with an immediate 20% late penalty for up to one week after the due date. Please be mindful of this deadline, and make every effort to turn in assignments well before the deadline.

Quizzes

There are no quizzes for this class.

Exams

All exams will be administered in class. You *must* be present to receive credit on the exams.

GRADES

Your grade is based on the following:

Assignments	40%
Final Project	30%
Exams	30%
Total Possible	100%

Grading Scheme

Grades will be assigned based on the following percentages:

A	=	94.0-100%	C	=	74.0-76.9%
A-	=	90.0-93.9%	C-	=	70.0-73.9%
B+	=	87.0-89.9%	D+	=	67.0-69.9%
B	=	84.0-86.9%	D	=	64.0-66.9%
B-	=	80.0-83.9%	D-	=	60.0-63.9%
C+	=	77.0-79.9%	E	<	60%

COURSE POLICIES

Academic Honesty/Ethical Conduct

Students are expected to maintain academic ethics and integrity in regards to performing their own work. The WSU Student Code clarifies cheating.

1.   Cheating, which includes but is not limited to:

    a.   Copying from another student's test paper;

    b.   Using materials during a test not authorized by the person giving the test;

    c.   Collaborating with any other person during a test without authority;

    d.   Knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part the contents of any test, without the authorization of the appropriate official;

    e.   Bribing any other person to obtain any test;

    f.   Soliciting or receiving unauthorized information about any test;

    g.   Substituting for another student or permitting any other person to substitute for oneself to take a test.

2.   Plagiarism, which is the unacknowledged (uncited) use of any other person or group's ideas or work. This includes purchased or borrowed papers;

3.   Collusion, which is the unauthorized collaboration with another person in preparing work offered for credit;

4.   Falsification, which is the intentional and unauthorized altering or inventing of any information or citation in an academic exercise, activity, or record-keeping process;

5.   Giving, selling or receiving unauthorized course or test information;

6.   Using any unauthorized resource or aid in the preparation or completion of any course work, exercise or activity;

7.   Infringing on the copyright law of the United States which prohibits the making of reproductions of copyrighted material except under certain specified conditions;

NMT Department policy dictates that any verifiable evidence of student academic cheating, as defined and determined by the instructor, will result in: 1) an automatic failing grade for the class and 2) a report to the Dean of Students that will include the student's name and a description of the student's dishonest conduct.

Accommodations for Students with Disabilities

In compliance with the American Disabilities Act (ADA), Weber State University seeks to provide equal access to its programs, services, and activities for persons with disabilities. Any student requiring accommodations or services due to a disability must contact the Services for Students with Disabilities (SSD) office. SSD can also arrange to provide course materials (including the syllabus) in alternative formats if necessary. For more information about the SSD contact them at voice: (801) 626-6413, TDD (801) 626-7283, **ssd@weber.edu (mailto:ssd@weber.edu)** or **http://departments.weber.edu/ssd (http://departments.weber.edu/ssd)**

Syllabus Changes

This syllabus is subject to change. I will notify the class regarding all changes. In the event of any discrepancy between this syllabus and content found in Canvas, the information in **CANVAS WILL TAKE PRECEDENCE**.

Late Work

All assignments are due on the date specified on the assignment. Late assignments will be accepted with an immediate 20% late penalty for up to one week after the due date. Please be mindful of this deadline, and make every effort to turn in assignments well before the deadline.

Course Fees

Course fees are designed to cover the costs of lab equipment maintenance and replacement including desktop and server computer systems and software; consumable materials and supplies; and support for lab aides, student tutors, and online instructional resources.

Participation

You are expected to attend all class sessions, arrive on time and remain until the end of class. Any exceptions should be cleared with me in advance. You are also expected to actively participate in online discussions and in-class cases and exercises.

Class Demeanor

You are expected to conduct yourselves with a high level of professional decorum. This includes listening attentively and respectfully to the comments and contributions of others, including guest speakers and your fellow students.

Laptops and Cell Phones

You are welcome to bring your laptop computer to class to follow along with class postings and online resources or work on team assignments. However, laptops can become a significant distraction to learning, so please avoid doing non-class related activities during class time. Out of courtesy to other students and to avoid disruption of classroom activities, please keep electronic devices (e.g., cell phones and PDA's) silenced and put away during class. If you must take a call, please leave the room to do so.

Additional WSU Resources

- **WildCat Mail (http://mail.weber.edu/)**
- **WSU Library (http://library.weber.edu/)**
- **Stewart Library EReserve (http://ereserve.weber.edu/)**
- **WSU Online Home (http://wsuonline.weber.edu/)**

Harassment/Discrimination

Weber State University is committed to providing an environment free from harassment and other forms of discrimination based upon race, color, ethnic background, national origin, religion, creed, age, lack of American citizenship, disability, status of veteran of the Vietnam era, sexual orientation or preference or gender, including sexual/gender harassment. Such an environment is a necessary part of a healthy learning and working atmosphere because such discrimination undermines the sense of human dignity and sense of belonging of all people in the environment. Thus, students in this class should practice professional deportment, and avoid treating others in a manner that is demeaning or derisive in any respect. While diverse viewpoints and opinions are welcome in this class, in expressing them, we will practice the mutual deference so important in the world of work. Thus, while I encourage you to share your opinions, when appropriate, you will be expected to do so in a manner that is respectful towards others, even when you disagree with them. If you have questions regarding the university's policy against discrimination and harassment, you may contact the university's AA/EO office (626-6239) or visit its website: **http://www.weber.edu/aaeo (http://www.weber.edu/aaeo)**

Threat to Self or Others

Any disclosure by a student, orally or in writing, whether related to class assignments or not, that communicates the possibility of imminent danger to the student or others will be shared with the appropriate authorities.

Campus Closure Policy

Emergency closures will be announced via Code Purple. If WSU campuses are closed for the day, this class will not be held. If for any reason the university is forced to close for an

extended period, we will conduct our class through Canvas as an online course. Look for announcements through Canvas.

Course Summary:

Date	Details	
Sun Sep 1, 2019	📝 **Adversarial Thought** (https://weber.instructure.com/courses/503742/assignments/4489836)	due by 11:59pm
Thu Dec 5, 2019	📝 **Peer Evaluations** (https://weber.instructure.com/courses/503742/assignments/4489833)	due by 11:59pm
	📝 **Peer Evaluations** (https://weber.instructure.com/courses/503742/assignments/4489842)	due by 11:59pm
Thu Dec 12, 2019	📝 **Final Exam** (https://weber.instructure.com/courses/503742/assignments/4489838)	due by 11:59pm
Tue Aug 25, 2020	📅 **Intro, Incident Response** (https://weber.instructure.com/calendar?event_id=1017723&include_contexts=course_503742)	12am
Thu Aug 27, 2020	📅 **Fundamental Security Concepts, Adversarial Thought** (https://weber.instructure.com/calendar?event_id=1017724&include_contexts=course_503742)	12am
Sun Aug 30, 2020	📝 **Assignment: Adversarial Thought** (https://weber.instructure.com/courses/503742/assignments/4489837)	due by 11:59pm
	📝 **Assignment: Lab and Challenge Setup** (https://weber.instructure.com/courses/503742/assignments/4489831)	due by 11:59pm
Tue Sep 1, 2020	📅 **Technology Refresher** (https://weber.instructure.com/calendar?event_id=1017725&include_contexts=course_503742)	12am
Thu Sep 3, 2020	📅 **Technology Refresher** (https://weber.instructure.com/calendar?event_id=1017726&include_contexts=course_503742)	12am
Tue Sep 8, 2020	📅 **Phases of an Attack** (https://weber.instructure.com/calendar?event_id=1017727&include_contexts=course_503742)	12am

Date	Details	
Thu Sep 10, 2020	📅 **Recon** (https://weber.instructure.com /calendar?event_id=1017728&include_contexts=course_503742)	12am
Tue Sep 15, 2020	📅 **Recon** (https://weber.instructure.com /calendar?event_id=1017729&include_contexts=course_503742)	12am
Thu Sep 17, 2020	📅 **Scanning** (https://weber.instructure.com /calendar?event_id=1017730&include_contexts=course_503742)	12am
Sun Sep 20, 2020	📝 **Recon Assignment** (https://weber.instructure.com /courses/503742/assignments/4489853)	due by 11:59pm
Tue Sep 22, 2020	📅 **Scanning** (https://weber.instructure.com /calendar?event_id=1017731&include_contexts=course_503742)	12am
Thu Sep 24, 2020	📅 **Scanning** (https://weber.instructure.com /calendar?event_id=1017701&include_contexts=course_503742)	12am
Sun Sep 27, 2020	📝 **NICE Challenge: Engineer's Audit Advice** (https://weber.instructure.com/courses/503742 /assignments/4489830)	due by 11:59pm
Tue Sep 29, 2020	📅 **Exploitation** (https://weber.instructure.com /calendar?event_id=1017702&include_contexts=course_503742)	12am
Thu Oct 1, 2020	📅 **Exploitation** (https://weber.instructure.com /calendar?event_id=1017703&include_contexts=course_503742)	12am
Tue Oct 6, 2020	📅 **Exploitation** (https://weber.instructure.com /calendar?event_id=1017705&include_contexts=course_503742)	12am
Thu Oct 8, 2020	📅 **Midterm Exam** (https://weber.instructure.com /calendar?event_id=1017732& include_contexts=course_503742)	12am
	📝 **Midterm Exam** (https://weber.instructure.com/courses /503742/assignments/4489841)	due by 11:59pm
Tue Oct 13, 2020	📅 **Exploitation** (https://weber.instructure.com /calendar?event_id=1017706&include_contexts=course_503742)	12am

Date	Details	
Thu Oct 15, 2020	📅 **Exploitation** (https://weber.instructure.com/calendar?event_id=1017704&include_contexts=course_503742)	12am
Tue Oct 20, 2020	📅 **SPRING BREAK - NO CLASS** (https://weber.instructure.com/calendar?event_id=1017707&include_contexts=course_503742)	12am
Thu Oct 22, 2020	📅 **SPRING BREAK - NO CLASS** (https://weber.instructure.com/calendar?event_id=1017708&include_contexts=course_503742)	12am
Tue Oct 27, 2020	📅 **Exploitation** (https://weber.instructure.com/calendar?event_id=1017709&include_contexts=course_503742)	12am
Thu Oct 29, 2020	📅 **Exploitation** (https://weber.instructure.com/calendar?event_id=1017710&include_contexts=course_503742)	12am
Sun Nov 1, 2020	📝 **NICE Challenge: Unauthorized Activity Alert** (https://weber.instructure.com/courses/503742/assignments/4489834)	due by 11:59pm
	📝 **Snort Scanning Assignment** (https://weber.instructure.com/courses/503742/assignments/4522103)	due by 11:59pm
Tue Nov 3, 2020	📅 **Midterm Exam Review** (https://weber.instructure.com/calendar?event_id=1017715&include_contexts=course_503742)	12am
Thu Nov 5, 2020	📅 **Midterm Exam** (https://weber.instructure.com/calendar?event_id=1017716&include_contexts=course_503742)	12am
Sun Nov 8, 2020	📝 **Packet Crafting Assignment** (https://weber.instructure.com/courses/503742/assignments/4522104)	due by 11:59pm
Tue Nov 10, 2020	📅 **Maintaining Access** (https://weber.instructure.com/calendar?event_id=1017722&include_contexts=course_503742)	12am
Thu Nov 12, 2020	📅 **Maintaing Access** (https://weber.instructure.com/calendar?event_id=1017711&include_contexts=course_503742)	12am

Date	Details	
Tue Nov 17, 2020	📅 **Maintaing Access** (https://weber.instructure.com/calendar?event_id=1017712&include_contexts=course_503742)	12am
Thu Nov 19, 2020	📅 **Maintaing Access** (https://weber.instructure.com/calendar?event_id=1017713&include_contexts=course_503742)	12am
Sun Nov 22, 2020	📝 **NICE Challenge: Malware Analysis: My Haunted Machine** (https://weber.instructure.com/courses/503742/assignments/4489835)	due by 11:59pm
Tue Nov 24, 2020	📅 **Maintaing Access** (https://weber.instructure.com/calendar?event_id=1017714&include_contexts=course_503742)	12am
Thu Nov 26, 2020	📅 **Covering Tracks** (https://weber.instructure.com/calendar?event_id=1017717&include_contexts=course_503742)	12am
Tue Dec 1, 2020	📅 **Report Presentations** (https://weber.instructure.com/calendar?event_id=1017718&include_contexts=course_503742)	12am
Thu Dec 3, 2020	📅 **Final Exam Review** (https://weber.instructure.com/calendar?event_id=1017720&include_contexts=course_503742)	12am
	📅 **Report Presentations** (https://weber.instructure.com/calendar?event_id=1017719&include_contexts=course_503742)	12am
Thu Dec 10, 2020	📅 **Final Exam** (https://weber.instructure.com/calendar?event_id=1017721&include_contexts=course_503742)	12am
	📝 **Final Exam** (https://weber.instructure.com/courses/503742/assignments/4489832)	due by 11:59pm
	📝 **Final Project** (https://weber.instructure.com/courses/503742/assignments/4489839)	due by 11:59pm
	📝 **Final Project Video Submission** (https://weber.instructure.com/courses/503742/assignments/4489840)	due by 11:59pm
	📝 **Chapter Reading: Read Chapter 1 in Skoudis** (https://weber.instructure.com/courses/503742/assignments/4489844)	

Date	Details
	Read Chapter 10 in Skoudis (https://weber.instructure.com/courses/503742/assignments/4489843)
	Read Chapter 2 in Skoudis (https://weber.instructure.com/courses/503742/assignments/4489845)
	Read Chapter 3 in Skoudis (https://weber.instructure.com/courses/503742/assignments/4489846)
	Read Chapter 4 in Skoudis (https://weber.instructure.com/courses/503742/assignments/4489847)
	Read Chapter 5 in Skoudis (https://weber.instructure.com/courses/503742/assignments/4489848)
	Read Chapter 6 in Skoudis (https://weber.instructure.com/courses/503742/assignments/4489849)
	Read Chapter 7 in Skoudis (https://weber.instructure.com/courses/503742/assignments/4489850)
	Read Chapter 8 in Skoudis (https://weber.instructure.com/courses/503742/assignments/4489851)
	Read Chapter 9 in Skoudis (https://weber.instructure.com/courses/503742/assignments/4489852)
	Scanning Assignment (https://weber.instructure.com/courses/503742/assignments/4522105)