Course Syllabus

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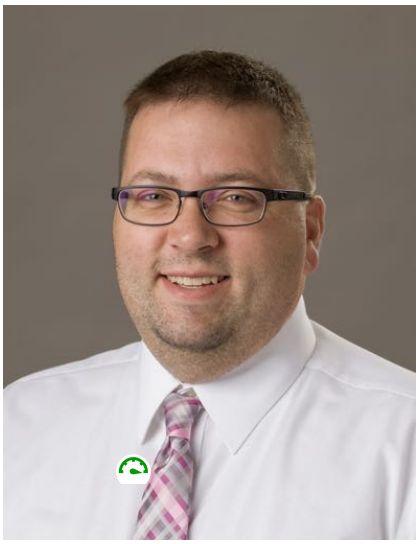
NET 4740 Security Vulnerabilities and Intrusion Mitigation | Spring 2019

Instructor



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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 contact me at my office phone or via Google Hangout 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	30%
Readings	10%
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.

The "I REALLY, REALLY NEED TO GET A C" Policy

The most effective method for obtaining a C or above in this class is to submit assignments when they are due and to stay current with course topics. The curriculum is carefully designed to fit the number of course weeks. In order to uphold academic rigor and integrity, student grades must be based on the degree to which the course requirements listed in the syllabus are fulfilled. Extra credit assignments are not allowed. If you approach me anytime during the term claiming that special allowance should be made because you need a C to move forward in the program, graduate, receive financial aid, etc., I will decline your request and refer you to this clearly worded policy.

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	
Mon Aug 26, 2019	**Intro; Fundamental Security Concepts (https://weber.instructure.com/calendar?event_id=962524&include_contexts=course_486643)**	12am
Wed Aug 28, 2019	**Offensive Security Methodologies; Adversarial Thinking (https://weber.instructure.com/calendar?event_id=962525&include_contexts=course_486643)**	12am

Date	Details	
Sun Sep 1, 2019	Adversarial Thought (https://weber.instructure.com/courses/486643/assignments/4146932)	due by 11:59pm
	Lab and Challenge Setup (https://weber.instructure.com/courses/486643/assignments/4199891)	due by 11:59pm
Mon Sep 2, 2019	Technology Refresher: Networking (https://weber.instructure.com/calendar?event_id=969105&include_contexts=course_486643)	12am
Wed Sep 4, 2019	Technology Refresher: Linux (https://weber.instructure.com/calendar?event_id=969106&include_contexts=course_486643)	12am
Sun Sep 8, 2019	Recon Assignment (https://weber.instructure.com/courses/486643/assignments/4146942)	due by 11:59pm
Mon Sep 9, 2019	Technology Refresher: Windows (https://weber.instructure.com/calendar?event_id=969107&include_contexts=course_486643)	12am
Wed Sep 11, 2019	Recon (https://weber.instructure.com/calendar?event_id=962526&include_contexts=course_486643)	12am
Sun Sep 15, 2019	Reading Critique #1 (https://weber.instructure.com/courses/486643/assignments/4146938)	due by 11:59pm
Mon Sep 16, 2019	Recon (https://weber.instructure.com/calendar?event_id=962527&include_contexts=course_486643)	12am
Wed Sep 18, 2019	Scanning (https://weber.instructure.com/calendar?event_id=962528&include_contexts=course_486643)	12am
Sun Sep 22, 2019	NICE Challenge: Sniffing Out Suspicious Activity (https://weber.instructure.com/courses/486643/assignments/4207561)	due by 11:59pm
	Social Engineering and Email Spoofing (https://weber.instructure.com/courses/486643/assignments/4146945)	due by 11:59pm
Mon Sep 23, 2019	Scanning (https://weber.instructure.com/calendar?event_id=969108&include_contexts=course_486643)	12am
Wed Sep 25, 2019	Scanning (https://weber.instructure.com/calendar?event_id=962530&include_contexts=course_486643)	12am
Sun Sep 29, 2019	Reading Critique #2 (https://weber.instructure.com/courses/486643	due by 11:59pm

Date	Details	
	/assignments/4146939)	
Mon Sep 30, 2019	Exploitation (https://weber.instructure.com/calendar?event_id=962534&include_contexts=course_486643)	12am
Wed Oct 2, 2019	Exploitation (https://weber.instructure.com/calendar?event_id=962535&include_contexts=course_486643)	12am
Sun Oct 6, 2019	Intrusion Detection Assignment (https://weber.instructure.com/courses/486643/assignments/4146935)	due by 11:59pm
	NICE Challenge: Lengthy Logs: Attack Analysis (https://weber.instructure.com/courses/486643/assignments/4207599)	due by 11:59pm
Mon Oct 7, 2019	Exploitation (https://weber.instructure.com/calendar?event_id=962536&include_contexts=course_486643)	12am
Wed Oct 9, 2019	MIDTERM EXAM (https://weber.instructure.com/calendar?event_id=962550&include_contexts=course_486643)	12am
	Midterm Exam (https://weber.instructure.com/courses/486643/assignments/4146936)	due by 11:59pm
Mon Oct 14, 2019	Exploitation (https://weber.instructure.com/calendar?event_id=962537&include_contexts=course_486643)	12am
Wed Oct 16, 2019	Exploitation (https://weber.instructure.com/calendar?event_id=962551&include_contexts=course_486643)	12am
Mon Oct 21, 2019	Exploitation (https://weber.instructure.com/calendar?event_id=962540&include_contexts=course_486643)	12am
Wed Oct 23, 2019	Exploitationm (https://weber.instructure.com/calendar?event_id=969109&include_contexts=course_486643)	12am
Mon Oct 28, 2019	Exploitation (https://weber.instructure.com/calendar?event_id=969110&include_contexts=course_486643)	12am
Wed Oct 30, 2019	Keeping Access (https://weber.instructure.com/calendar?event_id=962544&include_contexts=course_486643)	12am
Sun Nov 3, 2019	Packet Crafting Assignment (https://weber.instructure.com/courses/486643/assignments/4146928)	due by 11:59pm

Date	Details	
	Reverse Engineering (https://weber.instructure.com/courses/486643/assignments/4146943)	due by 11:59pm
	Reverse Engineering Assignment (https://weber.instructure.com/courses/486643/assignments/4146930)	due by 11:59pm
Mon Nov 4, 2019	Keeping Access (https://weber.instructure.com/calendar?event_id=962543&include_contexts=course_486643)	12am
Wed Nov 6, 2019	Keeping Access (https://weber.instructure.com/calendar?event_id=962542&include_contexts=course_486643)	12am
Sun Nov 10, 2019	Reading Critique #3 (https://weber.instructure.com/courses/486643/assignments/4146940)	due by 11:59pm
Mon Nov 11, 2019	Keeping Access (https://weber.instructure.com/calendar?event_id=962541&include_contexts=course_486643)	12am
Wed Nov 13, 2019	Keeping Access (https://weber.instructure.com/calendar?event_id=962552&include_contexts=course_486643)	12am
Sun Nov 17, 2019	Final Project (https://weber.instructure.com/courses/486643/assignments/4146934)	due by 11:59pm
Mon Nov 18, 2019	Covering Tracks (https://weber.instructure.com/calendar?event_id=962549&include_contexts=course_486643)	12am
Sun Nov 24, 2019	Reading Critique #4 (https://weber.instructure.com/courses/486643/assignments/4146941)	due by 11:59pm
Wed Dec 4, 2019	Final Exam Review (https://weber.instructure.com/calendar?event_id=962554&include_contexts=course_486643)	12am
	Peer Evaluations (https://weber.instructure.com/courses/486643/assignments/4146929)	due by 11:59pm
	Peer Evaluations (https://weber.instructure.com/courses/486643/assignments/4146937)	due by 11:59pm
Thu Dec 12, 2019	FINAL EXAM (https://weber.instructure.com/calendar?event_id=962545&include_contexts=course_486643)	5pm to 6:50pm
	Final Exam (https://weber.instructure.com/courses/486643/assignments/4146933)	due by 11:59pm
	NICE Challenge: Firewall Tables for Two (https://weber.instructure.com/courses	

Date	Details
	/486643/assignments/4207553)
	Quiz 1 (https://weber.instructure.com/courses/486643/assignments/4146931)
	Submitted Course Evaluations (https://weber.instructure.com/courses/486643/assignments/4146946)