National University

School of Engineering and Technology

ITM 435, Wireless LAN Security

Instructor: Nazila Safavi, MSEE, PhD **email:** nazila_safavi@yahoo.com
Phone: (949) 295-2709

Instructor Office Hours: Please contact instructor by phone or email; or make appointment to discuss issues during/after or prior to scheduled class

Class Schedule time/date: 3678 Aero Court San Diego, CA 92123-1711
Start Date: Tuesdays & Thursdays, August 4, 2015 - Saturday, August 29, 2015

Texts:

Recommended:

Tom Carpenter, CWSP Certified Wireless Security Professional Official Study Guide (2015)

Certitrek Publishing; CWSP-205 edition. ISBN-13: 978-0-9861267-9-6

Mark Ciampa, *CWSP Guide to Wireless Security*. Course Technology Incorporated, 2007, ISBN: 1-4188-3637-0. ISBN-13: 978-1-4188-3637-5

Course Description:

The course provides the fundamentals of the Wireless and mobile security technologies including: Wireless security principles, SOHO, SMB, Enterprise Layer 2 security, Wireless Protected Access (WPA), 802.11i Compliant Wireless Protected Access V2 (WPA2), Wireless Attacks and vulnerabilities, Protocol Analysis, Wireless Intrusion detection and Prevention systems, Device Management Protocols, Layer 3 VPN security and general security policy. The course provides the basic preparation for the CWSP exam. It also prepares students for the Certified Wireless Security Professional (CWSP) certification should students wish to obtain the CWSP certification.

Specific topic coverage includes:

Foundations of Wireless Security
Wireless LAN Vulnerabilities
Passive Wireless Discovery
Active Wireless Attacks
Wireless Security Models
Enterprise Wireless Hardware Security
Designing a Secure Wireless Network
Secure Wireless Authentication
Secure Wireless Transmissions
Managing the Wireless Network
Wireless Security Policy
Operational Support and Wireless Convergence

Learning Outcomes:

Upon successful completion of this course, the student will be able to:

- Demonstrate knowledge on implementation, troubleshooting and maintaining wireless security within any sized wireless network, small to enterprise..
- Demonstrate knowledge on hardware used to circumvent 802.11 security.
- Understand the processes involved in auditing.
- Understands use of 802.11 protocol analyzer based on its security features.
- Understand various authentication methods
- Recognizes and understands the various basic wireless security concepts.
- Describes various security infrastructure management protocols.
- Understands the purpose of various wireless LAN security

Course Outline:

Wk.	Topics	Chapter Readings	Exams Project Paper Presentation	Assignments/ Activities
1 8/4	-discuss syllabus, outline and project -Why Information Security -Foundations of Wireless Security	Syllabus/outline Slides online Chapter 1		Read Chapters Complete the Quizzes in class Complete the in class lab assignment (PING lab assignment) Chinese Cyberespionage video
2 8/6	-Video inf. security before and after public key -Wireless LAN Vulnerabilities	Clip online Chapter 2		Read Chapters Complete the Quizzes in class Complete the in class lab assignment (ASCII lab)
3 8/11	-Passive Wireless Discovery -Active Wireless Attacks	Chapter 3 Chapter 4		Read Chapters Complete the Quizzes in class Complete the in class lab assignment (RC4 lab)
4 8/13	Wireless Security Models Enterprise Wireless Hardware Security	Chapter 5 Chapter 6		Read Chapters Complete the Quizzes in class

				Complete the in class lab assignment (DES & AES key lab)
5 8/18	War Driving Session and Midterm			
6 8/20	Designing a Secure Wireless Network Secure Wireless Authentication	Chapter 7 Chapter 8		Read Chapters Complete the Quizzes in class Complete the in class lab assignment (password lab)
7 Saturday 8/22	Presentations			
8 8/25	Secure Wireless Transmissions Managing the Wireless Network	Chapter 9 Chapter 10	Last day to present	Read Chapters Complete the Quizzes in class
9 8/27	Wireless Security Policy Operational Support and Wireless Convergence	Chapter 11 Chapter 12		Read Chapters Complete the Quizzes in class Complete the in class lab assignment (wireless security policy and plan lab)
10 8/29	Final Exams War driving assignment due			

Course Requirements:

Students are expected to actively participate in course room activities, complete project, complete exams as scheduled, and turn in all assignments on time via course room. Failure to do so may result in the loss of points or the lowering of grade. Students are required to respond to discussion threads at least twice a week. Students are required to complete the hands-on hacking project (you may follow the instructions on the “AirCrack.pdf file” or use your own techniques.)

PROJECT Assignment:

A)) Groups of 3 or more; The project involves hacking to WEP. You may only hack to your own team’s devices (ie. Laptop to phone), or a friend’s with their consent and knowledge. Please refrain from hacking to anyone’s unit without their consent as this act is unethical and should the instructor find out, your project will earn 0 points total.
You may follow the instructions on “AirCrack”, use your own techniques or a combination of both.

OR

B)) VLAN connectivity Email and website hacking projects are also accepted under same criteria.
Instructor is open to suggestions that are relative.

ALL Projects must be accompanied by a LIVE DEMO presentation
Need extra credit? PRESENT EARLY: Projects presented in sessions 3 and 15% extra credit; Projects presented in session 4 earns 10% extra credit; Projects presented in session 6 earns 5% extra credit; Last day for presentations is session 7.

IN ADDITION: your team is required to write a very well written paper, 3-5 pages in APA6th edition or MLA, describing steps you took, challenges you came across, and lessons learned.

Grading Rubric:

Grading Rubric				
Criteria (40 total points)	**0 Needs-improvement**	**1 Basic**	**2 Proficient**	**3 Exceptional**
Relevant course theories, concepts, or materials are applied correctly. **(5 points)**	Relevant course theories, concepts, or materials are not explained.	Relevant course theories, concepts, or materials are explained.	Relevant course theories, concepts, or materials are applied correctly.	Course theories, concepts, or materials are analyzed correctly, via examples and supporting evidence.
Collaboration with other5 learners, relating the discussion to relevant course concepts. **(5 points)**	Does not collaborate with other learners.	Collaborates with other learners however, does not relate discussion to the relevant course concepts.	Collaborates with other learners, relates the discussion to relevant course concepts.	Collaborates with other learners, relates the discussion to relevant course concepts and extending the dialogue.
Uses related professional, personal, or other real-world experiences. **(5 points)**	Does not use professional, personal, or other real-world experiences.	Uses unrelated professional, personal, or other real-world experiences.	Uses related professional, personal, or other real-world experiences.	Uses related professional, personal, or other real-world experiences to extend the dialogue.
Position with applicable knowledge is established. **(5 points)**	Does not establish related position.	Establishes related position.	Position with applicable knowledge is supported.	Position with applicable knowledge is validated.

Paper 10/40: style, flow, grammar, content, use of word choice, academic tone
Presentation 10/40: completeness, presentation skills, teamwork, workload, concise explanation and clarity

Participation Guidelines:

Participate in discussions/ submit homework assignments/complete lab/ teamwork/ individual contribution/ class quizzes

Points-to-Grade Conversion:

The points you earn on this activity will be converted to a percentage grade according to the chart below and will be used to determine your final course grade.

0 points	=	0%	=	D
1 point	=	23%	=	D
2 points	=	46%	=	D
3 points	=	69%	=	D
4 points	=	71%	=	C
5 points	=	75%	=	C
6 points	=	79%	=	C
7 points	=	81%	=	B
8 points	=	85%	=	B
9 points	=	89%	=	B
10 points	=	90%	=	A
11 points	=	95%	=	A
12 points	=	100%	=	A

Course Grading:

Course requirements include the following major independent measures of learner competency.

Ensure to submit your work by Friday every week, as I read and grade everything during the weekends. Failure to submit your week by end of Friday may result in a delay of a week in receiving a grade for your work.

Learning Activity Weights and Scoring Guides

Activity	Weight
Mid-term Exam	**20/100**
Final Exam	**20/100**
Project	**40/100**
Participation (incl. lab, quizzes, attendance, involvement, individual and teamwork, classroom ethics)	**20/100**
Total Grade	**100/100**

Your final course letter grade is determined by a cumulative percentage, a total of the graded percentages you receive for each weighted activity above.

National University Statements on:

Diversity:

Learning to work with and value diversity is essential in every program. Students are required to act respectfully toward other students and the instructor throughout the course. Students are also expected to exhibit an appreciation for multinational and gender diversity in the classroom and develop management skills and judgment appropriate to such diversity in the workplace.

Ethics:

Ethical behavior in the classroom is required of every student. Students are also expected to identify ethical policies and practices relevant to course topics.

Communication Skills:

Both written and oral communications are required in the classroom of every student.

Writing Across the Curriculum:
http://www3.nu.edu/schools/SOET/writing.html

Student Discipline and Plagiarism:
http://www3.nu.edu/schools/SOET/plagiarism.html

Attendance Procedures:
http://www3.nu.edu/schools/SOET/attendance.html

Library Resources:
http://www3.nu.edu/schools/SOET/library.html

APA Reference Guide:
http://www.apastyle.org/pubmanual.html

References:

CWNP (http://www.cwnp.com/cwsp/index.html)

Certification Magazine (http://www.certmag.com/articles/templates/cmag_feature.asp?articleid=981&zoneid=9)

Videos and Articles for Hacked site recovery:
http://www.wadsworth.com/cgi-wadsworth/course_products_wp.pl?fid=M20bI&product_isbn_issn=9781418836375&token=6B8A960D6FEBC98750BCFBCFBEFEA8B8010F7F13D55BC1BB22E5379193284B00AD4BF5C178EA64C2F402EEEA3BC1080158CDE4517EFB1D99