CS6823 - Network Security - Fall 2018

Mondays 7-9 PM online at "WebEx"

Information is a critical asset in both corporate and military environments. Computer networks that carry this information are the "lifeblood" of these organizations. Information and network security is an important topic in order to insure that these networks remain available, are resistant to attacks and protect the information that they carry.

This course introduces the student to the fundamentals of creating a secure networking environment and will cover the topics of hacking, attack methodologies, firewalls, IDS, VPNs, cryptography and wireless networking.

Learning Objectives

Upon completion of this course you will have acquired the following knowledge:

Understand hacking techniques.

Understand the fundamentals of secure network design.

Understand the issues involved with providing secure networks.

Understand underlying cryptography required for secure communications, authorization and authorization.

Obtain hands on experience in cryptography and network security through laboratory work.

Instructor:

Phillip Mak

Email: pmak@nyu.edu

Skype: phillip.mak

Please do email me any suggestions, questions, topics, or interesting tidbits or articles you may have, which I will try go over them at the next class. This allows me to talk about topics that you have an interest with.

Office Hours: By appointment on Skype or phone.

Prerequisites:

Good working knowledge of networking and TCP/IP (e.g., CS 6843, EL5363/5373)

Basic understanding of operating systems with a working knowledge of Linux (e.g., CS6233)

Textbook:

No textbook assigned. Reading materials will be regularly assigned and posted on NYU Classes.

Grades:

10% Homework & Quizzes

30% Labs

30% Midterm

30% Final

~2% Bonus

Late assignments are not accepted.

Bonus - Class Participation

Bonus points may be given to active participants in this class, be it live during lecture or afterwards

Class Schedule

Weekly Webinar – Mondays 7-9PM on "WebEx"

Course Structure

Each week, lesson slides and reading materials will be posted before the lecture. Students are expected to review the materials before class, and the class time will be used to go over items of particular interest, confusion, or difficulty. Please be prepared for lecture to obtain the most out of this class. The video will be posted online.

Online Class Expectations

An online environment has different interaction model than a regular in-person class. Online classes, students need to be significantly more proactive by asking questions and letting me know if there are any topics of confusion.

Policies

The exact topics listed in this syllabus are subject to change. As the class progresses we will gauge where your interests lie and may adjust the topics and schedule appropriately.

If you need help or have any questions do not hesitate to contact me. If you would like to have a phone or skype video conversation please email to setup a time. You will have ample time from the time an assignment is given until it is due. I will not consider a network outage, unavailability of your computer or a computer in the lab (whether a specific computer or any computer in general), or other computer problem that occurred the night before the due date to be a justification for submitting an assignment late. However, systemic lab problems will be accounted for. Lab issues should be taken up with the lab admin whom you will receive contact information.

Interaction Policy

The best way to reach me is by email, which I generally respond very quickly. In addition, you can ask questions during the lecture time. Otherwise, I prefer course related questions to be asked in the Forums for the benefit of other students in the class.

Week	Date	Lesson
1	Mon, 10 Sept	Lesson 0: Introduction, Expectations, and Policies

Lesson 1: Security Basics: Terms & Definitions, Risk Assessment

2	Mon, 17 Sept	Lesson 2: Recon
3	Mon, 24 Sept	Lesson 3: Vulnerabilities and Exploits Part I
4	Mon, 1 Oct	Lesson 3: Vulnerabilities and Exploits Part II
	Mon, 8 Oct	NO CLASS - Fall Recess
5	Tue, 9 Oct	Lesson 4: Attacks - Owning the Box, Post-Exploitation

6	Mon, 15 Oct	Lesson 5: Cryptography - Randomness, Primes, RSA, DH
	Mon, 22 Oct	NO CLASS - Exam Week
	Sat, 27 Oct	MIDTERM on Lessons 1-5 Only
7	Mon, 29 Oct	Lesson 6: Message Integrity, PKI and TLS Part I
8	Mon, 5 Nov	Lesson 6: Message Integrity, PKI and TLS Part II
9	Mon, 12 Nov	Lesson 7: Layer 2 Security

Lesson 8: IPSec, Firewalls, and IDS

10	Mon, 19 Nov	Lesson 9: Authentication
11	Mon, 26 Nov	Lesson 10: Wireless Security
12	Mon, 3 Dec	Lesson 11: IPv6 Security
13	Mon, 10 Dec	Final Review
	Sat, 15 Dec	FINAL EXAM on Lesson 6-11

Learning Time for NYU Tandon Online Courses

Moses Center Statement of Disability

NYU School of Engineering Policies and Procedures on Academic Misconduct