REFERENCE ONLY
Syllabus is subject to change
Students currently enrolled in this course should reference NYU Classes syllabus only

Syllabus

Syllabus - CS6823 - Network Security - Fall 2020

Sections CF01 & CF02

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:
Skype:

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/Slack.

Class Communications will be on Slack.

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
40% Labs
25% Midterm
25% Final
2% Bonus
Late assignments are not accepted.

Bonus - Weekly Exercises
During each class, I will have several exercises which I will ask you to submit. These are not graded correctness, but just completing them will count towards bonus points. Completing all weekly exercises will provide a 2% bonus to your final grade, or fraction thereof.

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.

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. Slack will be the main form of communications between students.

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 voice or 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 Slack or 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 Slack for the benefit of other students in the class.

Exams
All exams will be conducted online.

If you are a Tandon Online Student outside the New York metro area, you may apply to take the exam at a testing center. If you are not available during the exam time due to work or other reasons, please let me know in advance.

***Class Schedule**
Live Class
7-9 PM ET until Sept 21
4-6 PM ET starting Sept 28

Week	Date	Lesson
1	Wed, 9 Sep	Lesson 0: Introduction, Expectations, and Policies Lesson 1: Security Basics: Terms & Definitions, Risk Assessment
2	Mon, 14 Sep	Lesson 2: Recon
3	Mon, 21 Sep	Lesson 3: Vulnerabilities and Exploits Part I
4	Mon, 28 Sep (4-6PM ET from here on)*	Lesson 3: Vulnerabilities and Exploits Part II
5	Thurs, 1 Oct	Lesson 4: Attacks - Owning the Box, Post-Exploitation
6	Mon, 5 Oct	No Class
6	Mon, 12 Oct Video Only	Lesson 5: Cryptography - Randomness, Primes, RSA, DH We will not have a live class this week
7	Mon, 19 Oct	Midterm Review
	Weekend of 23-25 Oct	Midterm on Lessons 1-5 Only
8	Mon, 26 Oct	Lesson 6: MI, PKI and TLS Part I
9	Mon, 2 Nov	Lesson 6: MI, PKI and TLS Part II
10	Mon, 9 Nov	Lesson 7: Layer 2 Security
11	Mon, 16 Nov	Lesson 8: Firewalls, IPS, and Perimeter Security
12	Mon, 23 Nov	Lesson 9: Authentication
13	Mon, 30 Nov	Lesson 10: Wireless Security
14	Mon, 7 Dec	Final Review
	Weekend of 11-13 Dec	Final on Lessons 6 Onward Only

Moses Center Statement of Disability

If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities (CSD) at 212-998-4980 or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.

NYU School of Engineering Policies and Procedures on Academic Misconduct

1. **Introduction:** The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School's rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School's Policy on Academic Misconduct.

2. **Definition:** Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:

    1. **Cheating:** intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person's work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.

    2. **Forgery:** altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.

    3. **Duplicating work:** presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.

    4. **Unauthorized collaboration:** working together on work that was meant to be done individually.

    5. **Plagiarism:** intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.

Access the entire School of Engineering Student Code of Conduct here:
engineering.nyu.edu/academics/code-of-conduct