

Information is a critical asset in both the corporate/business environment as well as the military. The computer networks that carry this information are becoming the “lifeblood” of these government and private sector organizations. Network security is an increasingly important topic in order to insure that these mission critical networks remain available and are resistant to malicious use and attack.

This course introduces the student to the fundamentals of establishing a secure networking environment. As cryptography is the essential tool in providing many network security related services we will touch on cryptography in this course.

The emphasis will be on practical concepts such as attack methodologies, forensics, defensive techniques, and tools such as IDS, firewalls, VPNs, etc which are used to design and build a secure network.

Learning Objectives:

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

Understand the fundamentals of secure network design

Foundation of the issues involved in providing secure network communications

Understand the underlying cryptography required for electronic commerce, secure communications and authentication

Obtain a hands on understanding of cryptography and network security through laboratory work.

Instructors:

Keith O'Brien

email: keith@keithobrien.org

Twitter: [keitheobrien](https://twitter.com/keitheobrien)

Phone: 212-714-4424 office (daytime) - Please email to make an appointment if you need to talk

Prerequisites: Good foundation in networking and TCP/IP: CS918 or EL537 Textbook: Internetworking with TCP/IP Vol1 5th Edition, Doug Comer Basic Understanding of Operating Systems with a working knowledge of Linux: Laboratory Work: Regular laboratory work will be assigned to reinforce the concepts that we are covering each week. The equipment in the NYU

Poly virtual lab environment will be used. You will document any research performed (sources of all research must be cited), methodology which was followed to achieve the result, copies of pertinent equipment configurations and diagrams of network topologies.

Late assignments will not be accepted.

Grades:

30% Labs

35% Midterm

35% Final

Points to Letter Grade Mapping:

| Grade | Minimum % |
|-------|-----------|
| A | 95 |
| A- | 90 |
| B+ | 87 |
| B | 83 |
| B- | 80 |
| C+ | 77 |
| C | 73 |
| C- | 70 |
| F | Below |

Policies: The exact topics listed in this syllabus is 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 either by email or IM. If you would like to have a phone 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.

Individual Work and Collaboration

In preparing your submissions for the weekly report, homework and laboratory projects you are authorized to use the textbook, your notes, web sites, on-line documentation and any other reference materials to which you have access. You may also discuss the assignment in general

with other members of the class or with anyone else whom you believe can be of assistance (including, possibly, the instructor).

The work that you submit for grading must, however, be exclusively your own work. Further all references used must be cited. This means that if you are using various web sites for assistance in laboratory assignments and/or homework you must cite the exact URLs. In addition, any other printed material used must be explicitly cited.

Textbooks (Optional)

Computer Security (3rd Edition)

Dieter Gollmann

ISBN: 0470741155

[Amazon Link](#)

Counter Hack Reloaded: A Step-by-Step Guide to Computer Attacks and Effective Defenses (2nd Edition)

Edward Skoudis

ISBN: 978-0131481046

[Amazon Link](#)

Cryptography Engineering - Design Principles and Practical Applications

Niels Ferguson , Bruce Schneier , Tadayoshi Kohno

ISBN: 978-0470474242

[Amazon Link](#)