

Teaching a Class in Network Security

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I propose to present the step-by-step process utilized to teach a junior-level class in Network Security.

Macon State College offers a Bachelor of Science in Information Technology degree. This has proven so successful that the program has increased from 50 students in the Fall of 1998 to over 900 now.

Matriculation through this degree program requires taking approximately 60 hours of introductory-level classes in web development, networking, programming, etc. in the Junior year. During the Senior year, students specialize in “tracks” such as Networking, Web Development, Programming, Database, Educational Technology, etc.

Due to recent geopolitical events and other factors, Macon State College has increased its offerings in the Network Security arena. Specifically, we have introduced a class in Network Security as a “Special Topics” class. After analysis of student participation and course success, it is expected to be made part of the regular Bachelor of Science curriculum, residing in the Networking track.

We have taught this class several times, and students report they have learned a lot about network security and employers report more-knowledgeable employees in return.

The impetus for this class was due to a survey performed of IT employers which indicated a serious need for IT graduates with network security knowledge. In a survey of 24 employers, 100% indicated a need for IT graduates to have these requisite skills. Specifically, they wanted IT graduates with skills in designing and implementing firewalls, fundamentals on cryptography, knowledge about how hackers invade a network and how to prevent this illegal process. In addition, employers, even those with non-Unix networks, wanted IT graduates to have a solid knowledgebase in Unix/Linux.

This is a brief overview of the course:

How Hackers conduct Reconnaissance on your Network

Searching the Fine Web (STFW) – discovering info about organizations by searching their websites.

Whois databases & the Domain Name System

- War dialing
- Demon dialing
- Finding live hosts
- Open ports
- Tools: Sam Spade, L0pht, THC-Scan, Nmap & others
- Defenses

How Hackers Gain Access to your Network

- Script Kiddies
- Stack Overflow Attacks
- Password Attacks
- Web Application Attacks
- Sniffing a Network
- IP Address Spoofing
- Tools: Netcat & Other Tools
- Defenses

How Hackers cover their Tracks & Hide

- Altering event logs
- Creating difficult to find Files & Directories
- Defenses

I propose to use my laptop to lead session participants in a step-by-step process of how this class was conducted. We will look into networks on the Web and discover valuable information via the use of multiple tools.