

Proposed Syllabus: CPTR 427 Network Security

Winter Semester, 2008

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Office Hours: See <http://cs.southern.edu/scot>
Credits: 3
Prerequisite: CPTR 328
Time & Place: MW 11:00 AM and T 2-5 PM

Required Text Books

Cryptography and Network Security 4/e, Stallings, Pearson Prentice Hall, ISBN: 0-13-187316-4

The Code Book, Singh, Anchor, ISBN: 0-385-49532-3

Additional research resources can be found at <http://library.southern.edu/research/>, <http://sectools.org/>,
http://www.owasp.org/index.php/Category:OWASP_WebGoat_Project.

Disability Policy can be found at <http://iss.southern.edu/Disability%20Statement%20-%20syllabus.htm>

Description

This course provides an overview to key issues and solutions for information security and privacy. Introduction to cryptography and its application to network and operating systems security; security threats; applications of cryptography; secret key and public key cryptographic algorithms; hash functions; basic number theory; authentication; security for electronic mail and network scripting languages.

Goals, Purpose and Objectives:

The purpose of this course is to prepare students for the real world of network security. Because this is an important, fast growing and changing field, the course goal covers training students to research security related information and implement the solutions found to protect vital assets. To accomplish these goals the student will research a chosen area and setup or write the necessary software on his/her own system. They will then prepare a lecture on the value, implementation and effectiveness of the chosen topic.

Lecture topics include:

- What is Security?
- Cryptography
- Symmetric and asymmetric key cryptography
- Hashes & Message Digests
- Public Key Algorithms & Infrastructure
- Number Theory Authentication
- IPSec
- SSH/SSL
- Mail/GNU Privacy Guard
- Hardening Issues
 - Windows
 - Firewalls
 - Web Issues
 - Intrusion Detection and Prevention
 - Wireless
- IDS
- Secure Communication
- Security Tools

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

- Understand the basic security concepts applicable to system administration
- Develop skill to be able to find useful security information
- Develop skill to be able to understand the legal and ethical responsibilities as a network security administrator
- Present an oral lecture and poster presentation on their own project.
- Develop skill to be able to evaluate the effectiveness of security information
- Develop skill to be able to understand the basics of security research

Requirements, Methods of Instruction & Grade Categories

THIS IS A READING AND RESEARCH COURSE! You will be expected to read voluminous amounts of information and present certain portions of it. You will also evaluate relevance of material and measure peer understanding of your presentations. We will have extensive labs over security related material from the textbooks. Your grade will be based on the following

Category	Weight	Hand-in Policy	Grading Scale	
Midterm Exam	15%	In Person	A	90% - 100%
Final	15%	In Person	B	80% - 89%
Network Labs	40%	Demonstration	C	70% - 79%
In Class Presentations	10%	In Person	D	60% - 69%
Homework/Quizzes/Attendance	10%	On Paper/Online as directed	F	< 60%
Research Presentation	10%	In Person		

Exams

Exams will cover material from the textbooks and labs. You will be asked to evaluate information and suggest implementation details. You may be required to demonstrate a specific element of knowledge on a computer section.

Network Labs (OSS)

These labs include implementing a set of tools and demonstrating them during the Lab. You will need to install, configure, and then demonstrate them to me for credit.

In Class Presentations/Discussions

Each person will be required to present at one or more hacking / network security topic. In addition the class period will terminate with a 10 minute quiz that includes material covered in the chapter and in your presentation. **The presenter will be responsible for making the quiz.** I expect each student to be respectful of those presenting and to add to the discussion by asking questions or making comments.

Homework/Quizzes/Attendance

Homework always includes the READING from the chapter listed to be covered that day! From time to time I may assign programming homework outside the reading. This will include implementing some of the cryptographic algorithms. For the implementations you may use C, C#, D or java. You may not use a scripting language or API that is pre-built. Quizzes are discussed above, and attendance will be taken at each class period and lab.

Reading

In case you missed it, reading and research are extremely important for this class. You will not be able to pass without reading the chapters assigned **before** you come to class. I will expect participation in class and you will be docked points in the Attendance category for not participating. Each chapter will include a WIKI assignment.

Notebook Computer Policy

The student is urged to make use of a notebook computer in the class. But if the student abuses the privilege the professor reserves the right to remove this privilege. This means, no games, browsing the Internet, blogging, or instant messaging.

Attendance Policy

Under no circumstances are you to come and see me or attend class sick. Email or Instant Message me letting me know you won't be in class and why.

Extra Credit

There is only one way to get extra credit in this course. It is designed to help you perform better in all of your classes. For those willing to maintain 35 hours of sleep between Sunday night and Thursday night (average 7 hours or more a night) and eat a healthy breakfast each morning (donuts do not count, at least cereal, and juice or some kind of fruit – dried fruit works if you are in a hurry), I will add 3% to your grade.. There will be a question on the final exam about your participation.

Academic Honesty

Cheating will not be tolerated. Verified incidents of dishonesty may receive a (2. b) punishment from http://www.southern.edu/?page=academics/policies/academic_honesty.php.