

# Proposed Course Syllabus

## CPTR 427 Network Security

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Winter Semester, 2011

Professor: Scot Anderson, Ph. D.  
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Office Hours: See <http://dra.cs.southern.edu/compwiki>  
Credits: 3  
Prerequisite: CPTR 328  
Time & Place: MW 11:00 AM and T 2:00-5:30 PM

### Required Text Books

*Network Security Essentials Applications and Standards 4<sup>th</sup> ed.*, Prentice Hall , ISBN 13: 978-0-13-610805-4  
*The Code Book*, Singh, Anchor, ISBN: 0-385-49532-3

Additional research resources can be found at <http://library.southern.edu/research/>

Disability Policy can be found at <http://www.southern.edu/disabilitysupport/facultystaff/Pages/syllabusstatements.aspx>

### Description

This course provides an overview to key issues and solutions for network security and privacy issues. It provides an 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; authentication; security for electronic mail; intrusion detection; malicious software and firewalls.

### Goals, Purpose and Objectives:

The purpose of this course is to introduce students to 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
- 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	
Exams	25%	In Person	A	90% - 100%
Network Labs	30%	Demonstration in Person	B	80% - 89%
Homework/Quizzes/Discussion	30%	As directed	C	70% - 79%
Research Project Presentation	15%	In Person Presentation	D	60% - 69%
			F	< 60%

### 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. No collaboration allowed.

### Network Labs

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. Although you are encouraged to seek help from and help others in the labs, you must demonstrate your own work to receive credit. Demonstrating someone else's work constitutes cheating.

### Homework/Quizzes/Discussion

**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#` or `java`. Quizzes may be in written or oral and given informally in class. 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 Homework/Quizzes/Discussion category for not participating.

### Research Project

The course website contains details for your research project. You will be required to hand in a IEEE LaTeX formatted document containing no less than 8 references from refereed articles and journals such as those found in the IEEE and ACM repositories. You must choose a security topic and report on the state of the art in that area. Papers should not be less than 4 pages.

### 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. Collaboration constitutes cheating unless specifically stated. Verified incidents of dishonesty may receive a (2. b) punishment from [https://www.southern.edu/PublishingImages/academic\\_honesty.pdf](https://www.southern.edu/PublishingImages/academic_honesty.pdf).