CNT 5412/CNT 4406: Network Security
Fall 2014

➥ Overview

Instructor:	Zhi Wang zwang@cs.fsu.edu (preferred means of communication) (850)645-0476 172 Love Building
Class meeting:	M, W, F 1:25 - 2:15pm 103 Love Building
Office hour:	Monday 2:30pm - 4:30pm, or by appointments
Course homepage:	http://www.cs.fsu.edu/∼zwang/cnt5412.html
Required textbook:	*Charles Kaufman, Radia Perlman and Mike Speciner*, **Network Security: Private Communication in a Public World**, *Prentice Hall, 2nd edition, 2002*

The course provides the students with an introduction to the fundamental concepts and mechanisms of network and system security. It covers security issues in both network and end systems, and thus provides an end-to-end view of the systems security. Specifically, it starts with introductions to cryptography, authentication, then covers important standards such as PKI, SSL, and IPSec. Broad topics in security will also be explored via student presentations. After completing the class, students will learn how to evaluate and design secure networking protocols and understand important concepts of operating system security.

➥ Prerequisites

CNT4504 (Introduction to computer networks), COP4610 (Introduction to operating systems), and MAD2104 (Discrete Mathematics I).

➥ Tentative Schedule

Lecture	Topic	Reading
Lecture 1	Introduction and a primer on networking	Chapter 1
Lecture 2	Introduction to cryptography	Chapter 2
Lecture 3	Secret key cryptography	Chapter 3 and 4
Lecture 4	Cryptographic hash functions	Chapter 5
Lecture 5	Basic number theory	Chapter 7
Lecture 6	Public key cryptography	Section 6.1∼6.6
Lecture 7	Authentication	Chapter 9 and 10
Lecture 8	Security handshake pitfalls	Chapter 11
Lecture 9	PKI	Chapter 15
Lecture 10	Real-time Communication Security	Chapter 17
Lecture 11	IPsec/IKE	Chapter 17
Lecture 12	IPsec/IKE	Chapter 18
Lecture 13	SSL	Chapter 19
Lecture 14	Firewall and IDS	Chapter 23
Lecture 15	Special Topics	
Lecture 16	Special Topics	

Note the schedule is tentative and subject to change with advanced announcements in the class. Likely, more lectures covering materials beyond the book will be added depending on the progress.

➥ Assignments and Exams

There will be homework assignments, one course project, a few quizzes, and *one* exam.

Homework: The homework assignments will be posted on the course homepage with advanced announcements in the class. Homework intends to enhance the understanding of basic content in the textbook. There will be an estimated five homework. Homework is an individual task. No collaboration or external help such as Internet search or forum are allowed.

Quizzes: Extended-length quizzes (considering it as mini-exams) will be given regularly through out the course. It covers contents in the slides and in the lectures. This form of quizzes has shown (in my previous courses) to be an effective way of learning as it promotes timely review of course materials. Date and scope of the quizzes will be announced in class. There will be ***no*** make-up for the quizzes.

Midterm: There will be only one exam for this course, the midterm. The midterm will be scheduled in class after finishing lecture 8, **security handshake pitfalls**. Lecture 1 to 8 cover the most important content of the book, and are the basis for the later chapters. Lectures after midterm will be tested by quizzes. Generally speaking, **no** make-up for the midterm will be provided. Students with legitimate excuses should contact the instructor **before** the midterm, with appropriate document, to arrange an make-up exam.

No final exam will be schedule for the course. Instead, the students are expected to complete a significant course project. According to the FSU registrar, the final exam is scheduled on Monday (12/8/2014) 10:00 am -12:00 pm. The time slot will be used for the make-up exam of midterm.

Course Project: Students will be required to complete a significant course project. The project should be security-related, including but not limited to network security. For example, operating system security, virtualization security, or mobile security are all welcome topics. Students should try to come up project ideas that are suitable to their skills and schedule. Otherwise, a list of project ideas will be provided in the course website for students to choose from. The project idea should be discussed and approved by the instructor. Each project will have two members with shared responsibility. With the instructor's permission, a student can complete the project by him-/her-self. No extra credit will be given because of this.

The schedule and deliverable of the project are:

Sep 12th	form a team, discuss with the instructor about the project idea (each team twenty minutes), submit a one page project proposal.
Oct 24th	mid-project report, submit a three-page report.
Dec 1st - Dec 5th	project presentation
Dec 7th	final project due, submit source code, presentation, and a six-page project report.

The writing should follow the SGIPLAN format. Graduate students **must** use the latex format. Undergraduate student can choose either the latex or word format.

Presentations: security is a comprehensive area with extremely diverse topics. The main material covered in this course represents a rather narrow focus of network security. Students will be assigned with reading materials about other topics in security and be asked to presented them in the class. The topics will be posted on the course homepage. Graduated students are expected to give one presentation each.

➥ Grading

The course will be graded according to the following proportions.

Item	Percentage
Homework	30%
Midterm	30%
Project	30%
Quizzes	10%

The letter grade will be assigned as: $A :\geq 90$, $A^- : [85, 90)$, $B^+ : [80, 85)$, $B : [75, 80)$, $C : [65, 75)$, $D : [55, 65)$, $E : [50, 55)$, $F :< 50$.

➥ Late Submissions

Late submission to the homework will be accepted up to three days after the deadline with a penalty of 10% of the assignment each day. Students with legitimate excuses should contact the instructor before the deadline, if possible, and submit appropriate document afterwards to be exempted from this rule.

➥ Course Policies

Academic Honor Policy:

Academic integrity is the key to the fairness and equality of all courses. Students are required to strictly follow the rules and guidelines laid out in the Florida State University Academic Honor Policy. It is important for the students to use their best possible judgment in everyday academic activities, and live up to their pledge to "be honest and truthful and will strive for personal and institutional integrity at Florida State University." Particularly, students are prohibited from collaborating on assignments unless explicitly allowed, or seeking answers or helps off the Internet. Anything submitted as the homework or a project must be his or her own original work.

Ethics:

The course will cover both defensive and offensive technologies in the network and computer systems security. Irresponsible use of these technologies could lead to serious consequence. Such behaviors include but are not limited to breaking into others' systems, circumventing security policies, or scanning and disseminating vulnerabilities. It is thus very important that the students use their best possible judgment in practicing them. Students are encouraged to experiment with their own equipment (or others' equipment under explicit permission) in an isolated network that is disconnected from the FSU and other public network. It is advised to use virtual machines connected to a virtual private network such as these supported by the KVM or the VMware Player.

Americans with Disabilities ACT:

Students with disabilities needing academic accommodation should:

- register with and provide documentation to the Student Disability Resource Center; and
- bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center
108 Student Services Building
874 Traditions Way
Tallahassee, FL 32306-4167
(850) 644-9566 (voice) (850) 644-8504 (TDD)
sdrc@admin.fsu.edu
http://www.disabilitycenter.fsu.edu

➥ Acknowledgment

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