Course Syllabus

Course Information

CS 4393.501 – Computer and Network Security

Term :	**Fall 2016**
Days & Time and Location :	TTh 7:00PM-8 :15PM @ SLC 2.302

Instructor Contact Information

Nhut Nguyen, Ph.D.
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Office hours: TTh 4:00PM – 5:00PM, also by appointment
Office: *ECSS 3.607*

Course Pre-requisites, Co-requisites, and/or Other Restrictions

CS 3340 – Computer Architecture
CS 3376 – C/C++ Programming in a UNIX Environment
CS 4348 – Operating Systems Concepts

Course Description

This course is a comprehensive study of the security principles and practices for computer systems and networks. Topics to be covered include basic security concepts, common attacking techniques, common security policies, basic cryptographic tools and secure protocols. Defense techniques such as authentication, access control and network intrusion detection will also be discussed. Software security, operating system security, network security as well as legal and ethical issues will also be covered (3 semester hours).

Student Learning Objectives/Outcomes

After successful completion of this course, a student is expected to gain:

- Ability to understand the basic principles and practices in computer and network security.
- Ability to understand what the foundational theory is behind computer security
- Ability to understand what the common threats are
- Ability to understand the basic cryptography systems
- Ability to understand how to play with the games with attackers.

Recommended Textbooks:

[Bis] *Matt Bishop*, Introduction to Computer Security, Addison-Wesley, 2004. ISBN 0-321-24744-2.

[KPS] *Charlie Kaufman, Radia Perlman, and Mike Speciner*, Network Security—Private Communication in a Public World, 2nd Edition. Prentice Hall, 2002. ISBN 978-0-13-046019-6.

[SB] *William Stallings and Lawrie Brown*, Computer Security - Principles and Practice 3rd Ed., Pearson 2016, ISBN 0-13-377392-2.

Suggested Reference Materials:

Charles P. Pfleeger and Shari Lawrence Pfleeger, Security in Computing, Fifth Edition. Prentice Hall, 2015. ISBN 978-0-13-408504-3.

Michael Goodrich and Roberto Tamassia, Introduction to Computer Security, Addison-Wesley, 2010. ISBN 0321557867

Required Course Materials:

Assignments will include hands on labs that require a virtual machine image that can be downloaded from the SEED lab project at the University of Syracuse (http://www.cis.syr.edu/~wedu/seed/)

Assignments & Academic Calendar

Exams: There will be three exams during the semester, and the last exam is comprehensive. Test material will be taken mainly from classroom lectures. Details will be announced in the class.

Assignments: Assignments will include hands-on labs using a SEED virtual machine image and typical question-answer/exercise homework.

For the hands-on labs a student may choose to work alone, or with a partner. If you decide to work with a partner you must inform the instructor and the TA information about your partner by August 30th.

There will be regularly assigned in-class exercises that will be used to assess class participation of each student.

Tentative Schedule

Week	Topic	Reading	Assignment
01	Introduction		
	Security – an overview	[Bish] Ch 1	
02	Security – an overview (cont'd) Lab basics	[Bish] Ch 2-3	
	Software security I	[BS] Ch 10, [Bish] Ch 26	#1
03	Software security II	[BS] Ch 11, [Bish] Ch 26	
	Malware I	[BS] Ch 6, [Bish] Ch 19	
04	Malware II	[Bish] Ch 19	
	Network security threats	[BS] Ch7	#2
05	Cryptography – an overview	[KPS] Ch 2	
	Private key cryptography I	[KPS] Ch 3, [BS] Ch20	
06	Private key cryptography II	[KPS] Ch 4	
	Exam I review		
07	***Exam I (Oct 4th)***		#3
	Hashes and message digests	[KPS] Ch 5	
08	Public key cryptography I	[KPS] Ch 6	
	Public key cryptography II	[KPS] Ch 6	
09	Authentication	[BS] Ch 3	#4
10	Access control	[BS] Ch 4	
	Exam II review		
11	***Exam II (Nov 1st)***		
	Secured protocols		#5
12	IPSec – an overview	[KPS] Ch 17-18	
	SSL/TLS	[KPS] Ch 19	
13	Intrusion detection systems (IDS)	[BS] Ch 8	
	Firewalls	[BS] Ch 9	#6
14	*Fall break – no class*		
15	Vulnerability analysis and security policies	[Bish] Ch 4-7,20	
	Exam III review		
16	***Exam III (Dec 6th)***		

Grading Policy

The grade each student earns from this class will be based the weighted score that is calculated from the following table:

Exam I	10%
Exam II	15%
Exam III	25%
Assignments	45%
Class Participation	5%
Total	100%

Grades are assigned according to the scale on the right:

A	93.0 - 100
A-	90.0 - 92.9
B+	87.0 - 89.9
B	83.0 - 86.9
B-	80.0 - 82.9
C+	77.0 - 79.9
C	73.0 - 76.9
C-	70.0 - 72.9
D+	67.0 - 69.9
D	60.0 - 66.9
F	Below 60.0

Course & Instructor Policies

- **New attendance policy instituted by the department: *three*** *consecutive absences lead to* ***one letter grade drop****.* ***Four*** *consecutive absences lead to* ***an F grade****.*
- *There will be no makeup exams under normal circumstances.*
- *No late homework or assignment will be accepted!*

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to *http://go.utdallas.edu/syllabus-policies* for these policies.

These descriptions and timelines are subject to change at the discretion of the Instructor.