Advanced Networking and Security

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Course Info	CIS413, CIS623
Classroom	118 Rockwell West
Office Hours	2pm-3:30pm, T/TH and by appointment
Instructional Coordinator(s)	Laraib Kazi (laraib.kazi@live.com)

This Syllabus Provides a General Plan for the Course. Deviations May Be Necessary.

Course Description:

Detailed examination of modern security topics, blending coverage of many of the domains of the CISSP with those of the CEH: Access Control, Network Security, Risk Management, Software Development Security, Cryptography, Architecture, Operations, Business Continuity, Legal/Ethical issues, as well as attack, defense and counter-measure mechanisms.

Students are expected to have a good knowledge of Unix/Linux and Windows including basic commands (at the very least: ls, ifconfig, ping, traceroute, nslookup, lsof, ps, netstat, and make commands) – we will provide you with virtual machines in our private network. You must have an understanding of TCP/IP and know what protocols use it. Student will receive significant "hands-on" experience both attacking vulnerable virtualized systems and defending their own.

General Objectives:

At the end of the semester, students should be able to...

- Identify LINUX and Windows vulnerabilities and common security problems
- Procure CERT advisories from the Internet
- Configure virtualization (VMWare) to support security and server flexibility
- Describe and interpret basic security models (Linux and Windows)
- Perform risk and cost/benefit analysis based on event probability
- Configure web protocols and caching algorithms for security
- Secure SQL servers, encrypt data and protect from injection
- Describe and perhaps configure Public Key Infrastructure
- Describe how ophCrack, Kali, etc. can be used to probe and then secure systems
- Demonstrate the correct procedures to limit access to specific users, including password policies
- Install and configure a firewall
- Scan networks and perform packet analysis
- Install and configure intrusion detection systems
- Perform real time tracking and interrogate audit logs
- Describe Cross-Site Scripting and configure systems to protect against it
- Understand security performance metrics
- Understand forensic procedures

Books (optional):
Principles of Information Security by Whitman and Mattord, 5th Edition (NOT the latest!)
Red Team Field Manual by Ben Clark

HONOR CODE

GRADING:

2	Tests (take-home and final exam)	100 pts. each	200
6-8	Assignments or Quizzes	25-200 pts. each	850 (approx.)
	Online Discussion or TBD		50
			1100

Grading will be based on a 100%-93% = A, 92-90 = A-, 89-87 = B+, 88-83 = B, 82-80 = B-, 79-77 = C+, 76-73 = C, 72-70 = C-
There may be some slight deviations from this scale in calculating the final course grades but such adjustments will always improve a student's grade.

Test Information:

Test	Format
Mid-Term	Short and Long Answer
Final	Short and Long Answer

Individual vs. Group Homework:

The details of these assignments and their due dates will be provided as the semester progresses. These assignments are to be done individually, unless otherwise indicated (see "Individual Work" and "Professional Standards of Scholarship" sections below.) All assignments are due at the beginning of class on the due date for the assignment unless otherwise announced.

All work turned in for a grade should be done to the same level of quality as would be expected in a professional/work environment. This means that all submissions should be neatly typed, use proper grammar and punctuation, have correct spelling, follow standard writing style guidelines, give credit when material is quoted, used, and/or referenced, etc. (See more detailed explanations below under *Individual Work* and *Professional Standards of Scholarship*). Sometimes use of various media (slides, computer presentation, live video) and tools/techniques (Powerpoint) are recommended.

Late Homework, Missed Tests, Etc.:

Late work is generally not accepted. All submissions are due at the beginning of class on the date specified unless otherwise explicitly noted in class, or via the class discussion or web site. Frequently, the assignment will be reviewed during the first few minutes of class on the day it is due. Thus, ALL HOMEWORK IS DUE DURING THE FIRST FIVE (5) MINUTES OF THE CLASS PERIOD AT WHICH IT IS DUE, unless otherwise announced. (If in doubt as to whether you will make it to class on time, submit it early!)

There will be NO MAKE-UP TESTS given unless you have a university-approved excuse and contact me BEFORE the test in question is given. Tests and homework will not be excused simply for vacations, etc. Schedule your vacations for after the semester is completely finished.

Individual Work:

For work assigned to be done individually (Individual Homework), you should turn in only work that you yourself have done. Work submitted as your own, but which was done all or in part by others, will not receive full credit – in fact, it is likely to receive *no* credit. This is known as plagiarism, and is dealt with very seriously. If you draw on previous work done by others, be sure to give appropriate credit when this is the case[1]. When you are asked to work alone, make sure you do that. Obviously, for group work you will work together and turn in a group product. In short, since you are each

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[1] For details see section entitled *Professional Standards of Scholarship*.

unique individuals, I expect to be able to easily tell from the work you submit that you worked independently; collaborative work tends to "jump out" at me because it looks "suspiciously similar" to something I've already seen. Make sure you work independently so that I can easily tell that you have done your own work. A penalty will be assigned to those who submit collaborative work when it was assigned to be done individually. The *minimum* penalty is usually a *ZERO* on the assignment, but University Policy allows for more serious penalties when warranted.

See University policy on Academic Integrity (CSU General Catalog) for further details.

Professional Standards of Scholarship:

Professional standards of scholarship require that any time an individual relies on another's work, proper credit must be given. This means that any time one directly uses textual material that it must be placed within quotes and referenced properly; other non-textual material must be shown with proper credit given citing the original source of the work. When material is not used in exact form (paraphrased, major ideas relied on or referred to, etc.) it should still be given credit as well, although it is not put within quotes. *Always give credit to ideas or materials that are not yours*[2]. If in doubt, give credit. Violations of these standards are *highly* disapproved of, and appropriate academic action will be taken depending on the situation. Be professional, give credit where it is due, turn in work that is your own, and you will be fine.

IF YOU ARE UNCERTAIN ABOUT HOW TO DEAL WITH THESE ISSUES, PLEASE TALK WITH ME. I AM HERE TO HELP YOU LEARN AND TO HELP YOU WHEN YOU ARE UNCERTAIN ABOUT WHAT TO DO. DO NOT HESITATE TO ASK QUESTIONS!

Besides expecting professional standards of scholarship, generally accepted U.S. standards for written work will applied to documents turned in for this course. This means that grammar, punctuation, spelling, and citation of references should follow standard guidelines. APA (American Psychological Association) or another common standard is acceptable for work submitted for this course. Be consistent; be neat; be professional.

You are receiving a degree from an American university, which you and the University want to be well-respected. Thus you will be held to relevant American academic standards. See University policy on Academic Integrity (CSU General Catalog) for further details.

Participation:

While participation is not directly taken into account when determining course grades, it is expected both during class lectures, via e-mail, during online discussions, etc. This course may involve new ideas and almost certainly requires learning new skills and behaviors with respect to your software development habits. Thus participation in class is anticipated to be beneficial and full involvement is expected.

Teacher-Student Communications:

The best way to contact me is via e-mail (until late in the semester when my fingers get really tired!). Send e-mail to the address listed on the first page of this syllabus and I will probably respond within 24 hours of receiving your note. I assume that you have an Internet e-mail address at CSU and will be using it regularly throughout this class. I will expect to be able to send e-mail to each of you as well.

Announcements, Schedule Changes, & Distribution of Assignments, Etc.

You *are responsible* for all announcements and any schedule changes made in class — even if you were not at class. Find out from your friends/classmates if there were announcements when you were not present!

Fall 2018 Schedule
http://selfsynchronize.com/hayne/security/ScheduleFall2018.htm

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[2] This includes software source code as well. Always give credit when you rely on someone else's ideas, examples, algorithms, source code, etc.