CPSC6128 COURSE SYLLABUS

INSTRUCTOR INFORMATION

INSTRUCTOR NAME: Jianhua YANG
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PHONE: 706-507-8180
OFFICE HOURS AND LOCATION: T-R: 9:30am-noon, CCT440
MEETING TIME AND PLACE: 8:00am to 9:30am (TR) for On-campus Offer, meet at CCT 408. For online offer, meet through D2L.

COURSE INFORMATION

COURSE CRN NUMBER/TITLE: 20879, 20348 / Network Security
CREDIT HOURS/PREREQUISITES: 3/ CPSC 5157, CPSC 6126

COURSE DESCRIPTION

Official Course Description from Catalog:

This course covers the fundamentals of computer and network security protocols, attacking and defending mechanism. After finishing this course, students will understand the problems of securing a network, and the underlying protocols and techniques, such as Cypto, IPsec, and SSL. Students will also examine the methods and tools to attack and defend a network including but not limited to: network reconnaissance, enumeration, exploits, firewalls, and IDS. Some advanced topics, such as wireless security, switch security, router security, and IPv6 and its security are included.

REQUIRED TEXTBOOK AND MATERIALS

Textbook:

1. Computer Security Second Edition, William Stallings, ISBN: 978-0-13-277506-9, Published: 2012
2. Network Security Essentials: Application and Standards, Fourth Edition, William Stallings, ISBN: 978-0-13-610805-4, Published: 2011

Other Required Materials:

1. See hands-on labs for details

Additional textbooks and References

1. Network Security Firewalls, and VPNs, Second Edition, J. Michael Stewart, ISBN: 978-1-284-03167-6, Published: 2013
2. Counter Hack Reloaded, Ed Skoudis, ISBN: 0131481045, Published: 2006
3. Cryptography Engineering, Neils Ferguson, Bruce Schneier, ISBN: 978-0-470-47424-2, Published: 2010

LEARNING OUTCOMES

COURSE LEARNING OUTCOMES and OBJECTIVES

Learning Objectives

By the end of this course, students will be able to:

- Explain concepts related to applied cryptography, including plaintext, ciphertext, symmetric cryptography, asymmetric cryptography, and digital signatures.
- Explain the theory behind the security of different cryptographic algorithms.
- Explain common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms.
- Outline the requirements and mechanisms for identification and authentication. Identify the possible threats to each mechanism and ways to protect against these threats.
- Explain the requirements of real-time communication security and issues related to the security of web services.
- Explain the requirements of non-real time security (email security) and ways to provide privacy, source authentication, message integrity, non-repudiation, proof of submission, proof of delivery, message flow confidentiality, and anonymity.
- Understand security concepts, Ethics in Network Security
- Understand security threats, and the security services and mechanisms to counter them
- Comprehend and apply relevant cryptographic techniques
- Comprehend security services and mechanisms in the network protocol stack
- Comprehend and apply authentication services and mechanisms
- Comprehend and apply relevant protocol like SSL, SSH etc.
- Comprehend and apply email security services and mechanisms
- Comprehend and apply web security services and mechanisms
- Comprehend computer and network access control

PROGRAM/GEN ED LEARNING OUTCOMES (IF Applicable))

COURSE ASSESSMENT

LEARNING ACTIVITIES

Course Topics

1. Security basics
2. Hacker tools and methods
3. Cryptography
4. Authentication and authorization
5. IPsec, and SSL/TLS
6. Wireless security
7. Perimeter security
8. IPv6 and its security
9. Intrusion detection

Course Methods

1. The class will be an online course through D2L (used to be CougarView) and Tegrity.
2. Students will be expected to complete 8 hands-on labs and a series of tests.
3. Students will be expected to watch the video posted at Tegrity if there is any.
4. Students will be expected to participate in online discussion.

Student Responsibilities

1. The attacking methods covered in this class cannot be used to attack any host in the Internet except the ones used for this class only.

2. Hands-on labs, assignments if there is any and term project:
    - All labs must be typed other than hand-written and must be submitted within one file (zip file).
    - Labs, assignments and term projects are due exactly at the prescribed time. **No late submission is accepted. 10 points off** for one day late submission.
    - Submit the softcopy of the assignments, labs through your D2L account.
    - Any questions or complaints regarding the grading of an assignment or test must be raised **within one week** after the score or the graded assignment is made available.
3. There are no make-up tests except in verified medical emergencies and with immediate notification.
4. Providing answers for any examination when not specifically authorized by the instructor to do so, or, informing any person or persons of the contents of any examination prior to the time the examination is given is considered cheating.
5. Penalty for cheating will be extremely severe. Use your best judgment. If you are not sure about certain activities, consult the instructor. **Standard academic honesty procedure will be followed for cheating and active cheating automatically results F in the final grade.** Please http://aa.columbusstate.edu/advising/a.htm#Academic Dishonesty/Academic Misconduct for additional information.
6. Pay very careful attention to your email correspondence. It reflects your communication skills. Avoid use non-standard English such as "how r u?" in your email message. In addition, I recommend you put the class number **CPSC 6128** and a brief summary of your question in your email subject. For example,

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    Subject: CPSC 6128 A question on IPsec.
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    I immediately discard anonymous emails.

Instructor Responsibilities

1. Maintain course materials at D2L including hands-on labs, quizzes, PPT slides for each chapter, and online discussion.
2. Give lectures through Tegrity and demonstration on the course material.
3. Assign appropriate homework that illustrates the concepts of the course, and grade and return the homework in a timely manner with adequate explanation.
4. Give tests over the material and grade and return the tests in a timely manner
5. Provide a website that supports the course.
6. Reply promptly (within two business days) to all student e–mail communications.

COURSE EVALUATION

GRADED LEARNING ACTIVITIES	Percentage	Points
Hands-on labs		30
Midterm Exam		25
Intrusion Detection Project		15
Final Exam		30
TOTAL		**100**

Percentage Range	Final Grade
90-100%	A
80-89%	B
70-79%	C
60-69%	D
59% and below	F

ADMINISTRATIVE POLICIES AND ACADEMIC RESOURCES

CSU DISABILITY POLICY

If you have a documented disability as described by the Americans with Disabilities Act (ADA) and the Rehabilitation Act of 1973, Section 504, you may be eligible to receive accommodations to assist in programmatic and/or physical accessibility. We recommend that you contact the Office of Disability Services located in Schuster Student Success Center, Room 221, 706-507-8755 as soon as possible. Students taking online courses can contact the Office of Disability services at http://disability.columbusstate.edu/. The Office of Disability Services can assist you in formulating a reasonable accommodation plan and in providing support. Course requirements will not be waived but accommodations may be able to assist you to meet the requirements. Technical support may also be available to meet your specific need.

ACADEMIC INTEGRITY

All students are expected to recognize and uphold standards of intellectual and academic integrity. As a basic and minimum standard of conduct in academic matters that students be honest and that they submit for credit only the products of their own efforts. Both the ideals of scholarship and the need for fairness require that all dishonest work be rejected as a basis for academic credit. They also require that students refrain from any and all forms of dishonorable or unethical conduct related to their academic work.

Students are expected to comply with the provisions of Section III, "Student Responsibilities," of the Columbus State University Student Handbook. This specifically includes the sections on "Academic Irregularity," and "Conduct Irregularity." In particular, the Columbus State University Student Handbook states:

“No student shall give or receive assistance in the preparation of any assignment, essay, laboratory report, or examination to be submitted as a requirement for any academic course in such a way that the submitted work can no longer be considered the personal effort of the student submitting the work.”

Examples of Academic Dishonesty include but are not limited to: Plagiarism (see definition below), giving or receiving unauthorized assistance on exams, quizzes, class assignments or projects, unauthorized collaboration, multiple submissions (in whole or part) of work that has been previously submitted for credit.

Plagiarism is any attempt to represent the work or ideas of someone else as your own. This includes purchasing or obtaining papers from any person and turning them in as your own. It also includes the use of paraphrases or quotes from a published source without properly citing the source. All written assignments may be submitted for textual similarity review to Turnitin.com for the detection of plagiarism.

Please be aware that anyone caught cheating or plagiarizing in this class will receive a “0” for the assignment/exam and may receive a “0” for the course.

STUDENT COMPLAINT PROCESS

Information and resources for student complaints and academic appeals are located at the following link on the Columbus State University website http://aa.columbusstate.edu/appeals/.

COURSE ATTENDANCE POLICY

Students are required to take part in the discussion related to each chapter through D2L.

Students are required to watch the lecture video posted at Tegrity.

TECHNICAL RESOURCES

HARDWARE REQUIREMENTS

How do I know if my computer will work with D2L?

SOFTWARE REQUIREMENTS

An- office suite such as Microsoft Office or Open Office

- To open PDF files you might need Acrobat Reader
- Browser Plugins (Pdf files, QuickTime files, Mp4 files) can be usually be obtained at the browsers website.
  Google Chrome
  Firefox
  Safari
  Internet Explorer (Caution: IE is often problematic for D2L-CougarVIEW)

If you need technical support or need assistance configuring your computer, you can refer to the link located in the "Support Resources" widget located on your "My Home" and your "Course Home" pages. If you cannot solve your problem after reviewing the knowledge base help pages, you can call help center 24-7 and talk to a Help Center agent. The number is 1-855-772-0423.

Library Resource Statement

COLLEGE SPECIFIC SECTION

N/A

COURSE SCHEDULE

Tentative Topic Schedule (online and onsite)

(the due date is tentative and subject to change. For exact due date and time, please check D2L)

Week	Topics	Labs and Tests	Notes
1 (Jan.11-17)	Class introduction, and Setting up Lab environments		
2(Jan.19-24)	Security overview-Lecture 1	Lab1	
3(Jan. 25-31)	Hacker tools and methods-Lecture 2	Lab2	
4(Feb.1-Feb. 7)	Hacker tools and methods-Lecture 2		
5(Feb.8-14)	Vulnerabilities and exploits-Lecture 3	Lab3	
6(Feb.15-21)	Vulnerabilities and exploits-Lecture 3	Lab4	
7(Feb.22-28)	Post exploitation-Lecture 4		
8(Feb.29-Mar.6)	Cryptography-Lecture 5	Lab 5 **Midterm Exam** (covers Lecture 1 to 4)	**Midterm Exam Week**

9(Mar.7-13)	IPsec-Lecture 6	Lab6	
10(Mar.14-20)	**Spring Break (no class)**		
11(Mar.21-27)	IKE-SSL-Lecture 7	Lab 7	
12(Mar.28-Apr. 3)	Layer 2 Security-Lecture 8		
13(Apr.4-10)	Wireless Security-Lecture 9	Lab 8	
14(Apr.11-17)	IPv6-Lecture 10		Project available
15(Apr.18-24)	Stepping-stone Intrusion and prevention (9 lectures)		
16(Apr.25-May 1)	Stepping-stone Intrusion and prevention (9 lectures)		Project due
17(May 3-9)	Final Exam Week Final Exam time (TBA)	Final Exam Lecture 1-4 (30%) Lecture 5-10 (70%)	