CS 6314
Computer and Network Security

Instructors

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Course Information

Course Description
A comprehensive review of security risks and threats to computer systems and networks. Review of components used in an enterprise security infrastructure. Advanced topics in the security of enterprise networks and systems.

Prerequisite Courses
None

Course Goals
The goal of this course is to introduce the advanced topics and technologies in computer and networks security.

Student Learning Outcomes
When you complete this course, you should be able to:
- Understand the network security threats
- Understand the vulnerability arising from network hardware or network protocols
- Analyze and resolve security issues in networks and computer systems

Course Delivery
This course is online. The lectures will be given through Blackboard and the course material will be available on the course website.

Recommended Textbooks and Materials
Introduction to network security, Douglas Jacobson, CRC Press, ISBN: 13: 978-1-4200-8587-7

Technology Requirements
The practical experiments require a local area network connected to other networks/Internet through a gateway. Optionally you may install an access point as a subnet that may use NAT. We will be using Linux OS for our experiments. The disk space requirement is minimal. We will install several servers including a web server, email server, telnet, ftp, and DNS. Some network traffic monitoring tools such as Wireshark will be installed and used during the experiments.

Blackboard: You are required to follow the posts and study all material posted on Blackboard.
Respondus Lockdown Browser: Exams will be taken on this browser. You need to install it on your computer if you are taking the exams remotely.
Computer: You must have access to an adequate computer and Internet connectivity to participate fully in the class. A table describing supported browsers can be viewed on Blackboard's support site[1].

Communication

You are responsible for checking your ASU email account and Blackboard throughout the duration of this course. I will generally respond to email and/or telephone messages within 24 hours.

Written communication via email: All private communication will be done exclusively through your ASU email address. Check frequently for announcements and policy changes. In your emails to faculty, include the course name and section number in your subject line in the form of "**[CS 6315] subject matter**".

Virtual communication: Office hours and/or advising may be done with the assistance of the telephone, Collaborate, Skype, etc.

Grading

Evaluation and Grades

ASU employs a letter grade system. Grades in this course are determined on a percentage scale:

Activity	Percentage
Weekly Assignments	35%
Project	30%
Final Exam	35%

Grade	Percentage
A	90 – 100
B	80 – 89
C	70 – 79
D	60 – 69
F	0 – 59

Assignment and Activity Descriptions

Weekly Assignments – You will be given coding and simulation assignments. You need to submit them before deadlines. No late assignment is accepted unless a reasonable excuse is provided.

Project – You will be a term project to be completed as a team or individually.

Final Exam – A final exam will be given on Bb to be completed by the given deadline.

Course Schedule (subject to change)

Week	Date
1	**Introduction:** Network Security and Threat Model
	Physical Network Layer Security:
2	a. Physical attacks**,** Header-Based Attacks Protocol-Based Attacks,
3	b. Authentication-Based Attacks, Traffic-Based Attacks
	Network Layer Security:
4	a. Header-Based Attacks, Protocol-Based Attacks,
5	b. Authentication-Based Attacks, Traffic-Based Attacks
6	**IPv6 and IPSEC**
7	**Transport Layer Attacks:** TCP-Based attacks, UDP-Based attacks, DNS attacks
8	**Network-Based Mitigation:** Transport Layer Security (TLS), Network Firewalls, Network-Based Intrusion Detection and Prevention

General Policies Related to This Course

All students are required to follow the policies and procedures presented in these documents:
- [Angelo State University Student Handbook](2)[2]
- [Angelo State University Catalog](3)[3]

Academic Integrity

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university's [Statement of Academic Integrity.](4)[4]

Accommodations for Students with Disabilities

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the [Student Disability Services website.](5)[5] The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dallas Swafford
Director of Student Disability Services
Office of Student Affairs
325-942-2047
dallas.swafford@angelo.edu
Houston Harte University Center, Room 112

Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures[6] for more information.

Plagiarism

Plagiarism is a serious topic covered in ASU's Academic Integrity policy[7] in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality. Resources to help you understand this policy better are available at the ASU Writing Center.[8]

Student Absence for Observance of Religious Holy Days

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day[9] for more information.

Title IX at Angelo State University

The University prohibits discrimination based on sex, which includes pregnancy, sexual orientation, gender identity, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination including: sexual assault, sex-based discrimination, sexual exploitation, sexual harassment, public indecency, interpersonal violence (domestic violence and/or dating violence), and stalking. As a faculty member, I am a Responsible Employee meaning that I am obligated by law and ASU policy to report any allegations I am notified of to the Office of Title IX Compliance.

Students are encouraged to report any incidents of sexual misconduct directly to ASU's Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator at:

Michelle Boone, J.D.
Director of Title IX Compliance/Title IX Coordinator
Mayer Administration Building, Room 210
325-942-2022
michelle.boone@angelo.edu

You may also file a report online 24/7 at www.angelo.edu/incident-form.

If you are wishing to speak to someone about an incident in confidence you may contact the University Health Clinic and Counseling Center at 325-942-2173 or the ASU Crisis Helpline at 325-486-6345.

For more information about Title IX in general you may visit www.angelo.edu/title-ix.

Required Use of Masks/Facial Coverings by Students

As a member of the Texas Tech University System, Angelo State University has adopted the mandatory Facial Covering Policy[10] to ensure a safe and healthy classroom experience. Current research on the COVID-19 virus suggests there is a significant reduction in the potential for transmission of the virus from person to person by wearing a mask/facial covering that covers the nose and mouth areas. Therefore, in compliance with the university policy students in this class are required to wear a mask/facial covering before, during, and after class. Faculty members may also ask you to display your daily screening badge as a prerequisite to enter the classroom. You are also asked to maintain safe distancing practices to the best of your ability. For the safety of everyone, any student not appropriately wearing a mask/facial covering will be asked to leave the classroom immediately. The student will be responsible to make up any missed class content or work. Continued non-compliance with the Texas Tech University System Policy may result in disciplinary action through the Office of Student Conduct.

Modifications to the Syllabus

This syllabus, including grade evaluation and course schedule, is subject to modification. In particular, the COVID-19 pandemic may require significant changes in course delivery and content on potentially short notice.

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[1] https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support

[2] https://www.angelo.edu/student-handbook/

[3] https://www.angelo.edu/catalogs/

[4] https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php

[5] https://www.angelo.edu/services/disability-services/

[6] https://www.angelo.edu/content/files/14197-op-1011-grading-procedures

[7] https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php

[8] https://www.angelo.edu/dept/writing_center/academic_honesty.php

[9] https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of

[10] http://www.texastech.edu/downloads/ttus-policy-face-coverings.pdf