BUSA 597: Ethical Hacking
Fall 2 - 2022

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Please use emails to ask me questions, and use BUSA-597 in the subject line of the email.
This is the fastest way to reach me.

COURSE INFORMATION

Required Textbook

Computer Security & Penetration Testing
    by A. Basta, N. Basta, M. Brown
    ISBN: 9780840020932

COURSE DESCRIPTION

In this course, you will develop and gain an understanding of the principles, concepts, and
methods to prevent and detect outside attack in business environment.

Learning Objectives

The purpose of this course is to give students of all backgrounds and experience levels a
well-researched and engaging introduction to the realm of network security. This is a "**very
hands-on"** course with examples that reflect today's most important and relevant security
topics. This course shows the different techniques how computers and networks are attacked,
so that students can be armed with the knowledge and techniques to successfully combat
hackers. Because the world of information security changes so quickly and is often the subject
of much hype, this course also aims to provide a clear differentiation between hacking myths
and hacking facts. Extensive hands-on exercises are included (about four with each lecture),
which allow students to practice skills as they are learned.

Student Learning Outcomes

Students will:
1. Develop a security mindset
2. Get familiar with various attack techniques
3. Learn hands-on methods of attack formulation, prevention and detection
4. Demonstrate knowledge and proficiency in:

a. Ethics of Hacking and Cracking
b. Cryptography
c. Reconnaissance
d. Sniffers
e. Malware
f. Linux
g. General hacking skills and knowledge
h. Vulnerability scanning

GRADING

Assignments (A Maximum of 50 Points)
You will have about 10 assignments (with multiple parts) to help you master materials in the class. These application assignments will count as 50% of your final grade.

- Assignments are very important to your final grade! Please be sure to complete and submit every assignment by the deadline.

- The weightage of assignments "may differ". If any assignment weighs more, it will be communicated to the students in advance.

Exams (A Maximum of 50 Points)
- Two exams will be given during the semester.
- You can get a maximum of 25 points for each exam. Each exam will be open for a few days on D2L. You can choose any time during the open time period to take the online exam. Once you start the exam, you will have about 90 to 120 minutes to complete the exam.
- You can't pause or retake the exam once it is started.
- These exams will be open-book, open-notes, and open-internet. However, they are not open-neighbor, and you can't discuss with your friends including people who are and aren't taking the class.
- Exams will cover ONLY the textbook. No Lab materials will be on the exam.

Final Grade
At the end of this semester, if your total is between 90 and 100, you will get an A; if it's between 80 and 89, you will get a B, and so on. **Please note that the actual points will be used to calculate your final grade.** No curving will be used in this class.

Points	Grade
90-100	A
80-89	B
70-79	C
60-69	D
below 60	F

Student Responsibilities/Tips for Success in the Course

1. Students are expected to:
   a. Read the text related to the topic listed for each week on D2L.
   b. Complete all required assignments as scheduled
   c. Watch any tutorial/recorded videos as posted
   d. Read the slides for each week/topic

2. This syllabus is tentative for the semester. Certain topics may be stressed more, or less than indicated in the schedule. Depending on the class progress, certain topics may be omitted or added.

3. Behavior: "All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment." (See Student's Guide Book). During your collaboration with me and your fellow students online or in class, professionalism and respect will be expected.

4. Any form of cheating – copying, sharing files, submitting the work of another as your own – is not permitted. Students who participate (as givers/receivers) in any form of cheating will fail the course.

TECHNOLOGY REQUIREMENTS

The following information is provided to assist you in successfully using technology to complete the assignments and class activities:

- The course will require you to download and install open-source software. Specifically, you may be asked to install Virtual Machines (VMs). It is the student's responsibility to follow the given instructions and get the system ready in due time. You cannot come to the instructor only a few days before the assignment is due and say that you have NOT installed the required software. You WILL HAVE ample time for all tasks !
- To fully participate in online courses you will need to use a D2L-compatible internet browser. Please check with techsupport if in doubt.
- You will need regular access to a computer with a broadband Internet connection.
- You will need to buy an external wifi card for some experiments in this class (even if your computer is equipped with wifi, you WILL need to buy a new external one – less than $15).
- The minimum computer requirements are:
  - **4+ GB of RAM (8+GB preferred), 20 GB or more (EMPTY Hard-disk space).** You will need to install Linux and Windows VMs, so make sure your system has the capability. If you do not have a system with empty hard-disk space, you WILL need to buy an External hard-drive. If you cannot, please DROP this class. All assignments/labs are run on the Linux VM, and if you cannot have a VM, you will lose 50% of the grade.
  - Broadband connection required courses are heavily video intensive
  - Video display capable of high-color 16-bit display 1024 x 768 or higher resolution
- You must have a:
  - Sound card, which is usually integrated into your desktop or laptop computer
  - Speakers or headphones.
  - For courses utilizing video-conferencing tools and/or an online proctoring solution, a webcam and microphone are required.

- At a minimum, you must have Microsoft Office 2013, 2010, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students, and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.
- This is and advanced course. You are expected to know how to take screenshots and put them in Word/Pdf documents.
- For additional information about system requirements, please see: https://secure.D2L.com/tamuc/index.learn?action=technical

LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:
https://community.brightspace.com/s/article/Brightspace-Platform-Requirements

LMS Browser Support:
https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

YouSeeU Virtual Classroom Requirements:
https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

COMMUNICATION AND SUPPORT

- If you ask me questions by emails, I will reply within 48 hours. However, I usually answer them much faster than this.
- If you have questions about software operations, please be sure to include the screenshots of the questions in the emails.
- All assignment due dates, project deadlines, and exam time are central time in the United States.

COURSE AND UNIVERSITY POLICIES

Course Specific Procedures/Policies

The class schedule will be provided and updated in D2L. A tentative topics list with each week is listed at the end of this document. Each assignment will be listed with its due date. Since assignments make up the majority of your grade, you should make every effort to complete them on time. Late assignments are **highly** discouraged. For each day an assignment is late it will be deducted 15%. Under **NO** circumstances will I accept an assignment more than FOUR DAYS late.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook.
http://www.tamuc.edu/admissions/registrar/documents/studentGuidebook.pdf

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: Netiquette http://www.albion.com/netiquette/corerules.html

TAMUC Attendance

For more information about the attendance policy please visit the Attendance webpage and Procedure 13.99.99.R0.01.
http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf

ADA Statement

Students with Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce
Gee Library- Room 132
Phone (903) 886-5150 or (903) 886-5835   Fax (903) 468-8148
Email: Rebecca.Tuerk@tamuc.edu
http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed

handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

COURSE CALENDAR (Tentative)

This is only a tentative class schedule. Updates will be communicated and maintained in D2L

WEEK 1: <u>Installations</u>

- Install VM
- Install Kali
- Install WebTarget
    - Watch – UpdateKali   ~ 2.45 mins
- Install Windows
    - Watch - Win-Settings   ~ 5.00 mins
- Net Pen Test Buy   ~ 8 mins   <<<<<<<<<<<<< need in week 3

WEEK 1: <u>Introduction to Penetration Testing   - Chapter 1</u>

- BurpSuite   ~ 5.30 mins
- Network Basics   ~ 9 mins
- How HTTP Works   ~ 18.45 mins

WEEK 2: <u>Ethics of Hacking and Cracking, Reconnaissance   - Chapter 2</u>

- Static HTML   ~ 13.45 mins
- Php & Scripts   ~ 20 mins
- Session Management   ~ 8 mins
- Session Fixation & Hijack   ~ 17.30 mins
- Weak Logout   ~ 4.40 mins

- Http Header Injection   ~ 13.30 mins

WEEK 2: TCP/IP Vulnerabilities   - Chapter 5

- SSL – TLS   ~ 19.20 mins
- ChangeDNS   ~ 16 mins   Type CTRL+X to stop the ping
- VPN   ~ 14.30 mins   Read what is a VPN before
- DarkWeb   ~ 21.30 mins

WEEK 3: Hacking Network Devices   - Chapter 9

- Add Usb Network Card   ~ 11 mins
- MAC Address   ~ 8 mins
- Network Modes-Man-Mon   ~ 10 mins
- Sniffing Airomon   ~ 13.30 mins   Read Chapter 4 if you can/want
- DeAuthentication   ~ 17.30 mins

WEEK 3: Encryption and Password Cracking   - Chapter 6

May need a Router Extender … so you can leave your normal router and play with the extender settings.
- WEP Cracking   ~ 26 mins
- Capture Handshake – WPA 1/2   ~ 13 mins
- Crunch Wordlist – WPA 2/2   ~ 9.30 mins
- BruteForce Web Password   ~ 10 mins

WEEK 4: Scanning Tools and Sniffers   - Chapter 3

- PostConnection-NetDiscover   ~ 6 mins
- ZenMap   ~ 9.30 mins
- Wireshark   ~ 16.30 mins

WEEK 4: Spoofing   - Chapter 7

- BetterCap   ~ 16 mins
- MiTM Attacks ARP-Poison   ~ 14.30 mins

- EtterCap MITM   ~ 8 mins
- Caplets-Bettercap.mp4   ~ 32 mins   Downgrading https
- JavaScript-Bettercap   ~ 9.30 mins

WEEK 5: <u>Session Hijacking</u>   - Chapter 8

- Metasploitable   ~ 13.15 mins   System Pentesting
- MetasploitAttack   ~ 18 mins
- Veil-UserAttack   ~ 10 mins
- Veil-CreateBackDoor   ~ 10.30 mins
- TestBackDoor   ~ 15 mins

WEEK 5 :   EXAM 1 WEEK

- BeEF   ~ 16.15 mins   Browser Exploitation
- BeEF-Injection.cmproj   ~ 15 mins
- BeEF-Attacks   ~ 12.30 mins

WEEK 6: <u>Web Security & Malware / Trojan Horses</u>   -Chapter 10

- Web Reconn   ~ 14.20 mins
- Web Pen Testing   ~ 6.20 mins
- ZAP   ~ 10.45 mins
- Web Shell   ~ 10 mins
- File Upload   ~ 9.40 mins
- Malicious File Uploads   ~ 17 mins

WEEK 6: <u>Programming Exploits</u>   - Chapter 13

- XSS   ~ 10 mins
- XSS – Stored   ~ 13.30 mins
- XSS - Real – Beef   ~ 9.45 mins

WEEK 7: <u>SQL Injection</u>   - Chapter 11

- SQL Injection   ~ 13 mins
- SQL Inject   ~ 16.30 mins
- SQLMap Tool   ~ 15.15 mins