Scripting for Network Defense

IT 262 / CRN# 49696
Spring 2022
James Hart
hart56@unm.edu / ph. 505.239.3435
Office Hrs: MW 10:00 PM – 3:00 PM
TTh   1:00 PM – 2:00 PM
or
ARR

COURSE DESCRIPTION

Scripting programming for security purposes. Students build on prior programming, operating systems, and security knowledge to develop, code, use, and debug new and existing scripts.

EMAIL

Be sure to check your contact information in Banner and keep it updated. UNM email as our official form of course communication. When communicating with your instructor always include class name in the subject header.

Student Learning Outcomes/Course Objectives

- Install and configure a Linux host in a virtual environment with IP V4 and IP v6 addressing.
- Compare and contrast IP V4 and IP V6
- Demonstrate prescribed Linux commands
- Demonstrate editing text file with Linux commands
- Compare and contrast TCP and UDP ports
- Demonstrate scanning a network with Nmap
- Demonstrate using Wireshark and tshark to analyze given network
- Script with bash, Nmap, and tshark
- Install and configure a Windows 10 host in a virtual environment
- Demonstrate editing text file (.bat) with MS-DOS commands
- Demonstrate scripting with Power Shell
- Demonstrate scripting with Python

TECHNICAL SKILLS

In order to participate and succeed in this class, you will need to be able to perform the following basic technical tasks:

- Use UNM Learn (help documentation located in "How to Use Learn" link on left course menu, and also at [Online Student Documentation]( )). Also, UNM-Valencia provides a Blackboard Learn Jumpstart self-learning module to give you practice with the most commonly used tools in UNM Learn. Ask your instructor if you do not see the UNM-Valencia Blackboard Learn Jumstart in your list of classes in UNM Learn.
- Use email – including attaching files, opening files, downloading attachments
- Use the in-course web conferencing tool (Collaborate Web Conferencing software in UNM Learn) or use Zoom or other web conferencing tool
- Download and install an application or plug in – required for participating in web conferencing sessions

TECHNICAL REQUIREMENTS

Computer
- A high-speed Internet connection is highly recommended.
- Supported browsers include: [Detailed Supported Browsers and Operating Systems]
- Any computer capable of running a recently updated web browser should be sufficient to access your online course. However, bear in mind that processor speed, amount of RAM and Internet connection speed can *greatly* affect performance.
- For the best experience when using the Kaltura Media Tools inside UNM Learn, be sure to use a [supported browser] on a desktop.
- Microsoft Office products are available free for all UNM students (more information on the [UNM IT Software Distribution and Downloads page])
- Please update your contact information in Loboweb: [MyUNM Login]. When you log into MyUNM, Enter LoboWeb. Click on the Personal Information link to make sure your contact information is up to date.

Web Conferencing
Web conferencing will be used in this course during the following times and dates:
For the online sessions, you will need:
- *A USB headset with microphone. Headsets are widely available at stores that sell electronics, at the UNM Bookstore or online.*
- *A high-speed internet connection is highly recommended for these sessions. A wireless Internet connection may be used if successfully tested for audio quality prior to web conferencing.*

- *You should also dress as you would when attending an in-person class, even if you do not turn on your video camera.*

Technical Support
- For UNM Learn Technical Support: (505) 277-0857 (24/7) or use the "Create a Tech Support Ticket" link in your course.
- For UNM-Valencia IT Support: (505)925-8911
- For UNM Web Conference Technical Help: (505) 277-0857

Required Textbooks and References:

- Non required but suggested

Supplementary Materials:

- <u>Linux Basics for Hackers</u>; Occupytheweb; No Starch Press; ISBN# 978-1-59327-855-7
- <u>NMAP Network Scanning</u>; Gordon Lyon; Insecure; ISBN# 978-0-9799587-1-7
- <u>Wireshark Network Analysis</u>; Laura Chappell; Chappell University; ISBN# 978-1893939943

Required Supplementary Materials:
USB Flash Drive (at least 16G)

COURSEWORK AND PARTICIPATION

Instructor Response Time
I routinely check the course for postings or emails, Monday through Friday between 7:00 and 10:00 AM. You can anticipate a 24 to 48 hour response from me. If you MUST contact me, please text, but don't forget I sleep too.

Procedures for Completing Coursework

- *Tests and quizzes are posted for completion on UNM Learn, they need to be taken online. If you have difficulty competing this work, contact your instructor. For most assignments you will have 1 week to complete. If you cannot complete, notify me for options*

Course Schedule
There will be one to two recorded lectures per week. Each lecture will have a phrase (ex. "dogs bark"). Who knows where it will appear. To get credit for the lecture you must email me the phrase. The phrase could be anywhere in the lecture.

Expectations for Participation

- *time required (9-12 hrs per week)*
- *students are expected to learn how to navigate in Learn and Cisco's Netacad*
- *students are expected to keep abreast of course announcements*
- *students are expected to use the Learn course email as opposed to a personal email address*
- *students are expected to keep instructor informed of class related problems, or problems that may prevent the student from full participation*
- *students are expected to address technical problems immediately*
- *students are expected to observe course netiquette at all times*

Netiquette
- *[Netiquette document](#)*

NOTES TO STUDENTS ABOUT PARTICIPATION IN A COURSE USING UNM LEARN:

Tracking Course Activity
UNM Learn and Cisco Netacad automatically records all students' activities including: your first and last access to the course, the pages you have accessed, the number of discussion messages you have read and sent, web conferencing, discussion text, and posted discussion topics. This data can be accessed by the instructor to evaluate class participation and to identify students having difficulty

Grading Scale

		A	90 +
Lecture Attendance	10%	B	80 - 89
Labs	30%	C	70 - 79
Tests	30%	D	60 - 69
Final	30%	F	< 60
Total	100%		
	F		

UNM POLICIES

Equal Opportunity and Non-Discrimination

In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered "responsible employees" by the Department of Education (see pg. 15). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity.
Read more about campus policy regarding sexual misconduct.

Copyright Issues

All materials in this course fall under copyright laws and should not be downloaded, distributed, or used by students for any purpose outside this course.

The UNM Copyright Guide has additional helpful information on this topic.

Accessibility and Accommodations

The American 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 accommodations of their disabilities. If you have a disability requiring accommodation, please contact:

- UNM-Valencia Student Services if you are a Valencia campus student. The phone number is 505-925-8560
- UNM Accessibility Resource Center in 2021 Mesa Vista Hall if you are a main campus student. The phone number is 505-277-3506.

Information about your disability is confidential and your instructor cannot refer you for accommodations. Be aware that you will need to provide documentation. If you need assistance in obtaining documentation, the offices above can assist you.

Accessibility Statements

Blackboard's Accessibility statement
Microsoft's Accessibility statement
Include links to accessibility statements for all other technologies included in the course.

Academic Integrity

You should be familiar with UNM's Policy on Academic Dishonesty and the Student Code of Conduct which outline academic misconduct defined as plagiarism, cheating, fabrication, or facilitating any such act.

Drop Policy

UNM Policies: This course falls under all UNM policies for last day to drop courses, etc. Please see or the UNM Course Catalog for information on UNM services and policies. Please see the UNM academic calendar for course dates, the last day to drop courses without penalty, and for financial disenrollment dates.

UNM RESOURCES

- **UNM Valencia Campus Tutoring Services**

- **UNM Main Campus CAPS Tutoring Services**

- **UNM-Valencia Library**

- **UNM Libraries**

- **"Life" Resources available to UNM-Valencia Students**

- **Student Health & Counseling (SHAC) Online Services**

FOR MILITARY-CONNECTED STUDENTS
There are resources on campus designed to help you succeed. You can approach any faculty or staff for help with any issues you may encounter. Many faculty and staff have completed the GREEN ZONE training to learn about the unique challenges facing military-connected students. If you feel that you need help beyond what faculty and/or staff can give you, please reach out to the Veterans Resource Center on main campus at 505-277-3181, or by email at vrc@unm.edu. The Veterans Coordinator at UNM-Valencia is in the Student Services Office, at 505-925-8560.

SEMESTER DEADLINES
- 28-Jan   Enrollment Cancellation for non-payment
- 28-Jan   Last Day to Add Courses or Change Sections
- 3-Sep   Last day to CHANGE grade mode on LoboWEB.
- 4-Feb   Last day to DROP without "W" grade and 100% tuition refund
- 11-Feb   Last day to Grading Options
- 13-Mar   *Spring Break*
- 15- April   Last day to DROP without Dean's Permission
- 6-May   Last day to DROP with Student Services Permission.
- 9-May   *Finals Week*
- 13-May   Last day to report removal of Incomplete.

- Friday April 16: Last Day to Withdraw Without Student Services Permissions
- Friday May 7. Last Day to Withdraw With Student Services Permission
- Saturday May 8: Last day of instruction
- May 10 – 15: Finals Week

COURSE OUTLINE (*Please note that this course outline is subject to change. If changes occur, you will be notified*)

Week 1 / January 17

Installing Linux in a virtual environment

- VMware setup
- Install
- Linux basics
- Linux commands

Week 2 / January 24

More Linux Commands

Week 3 / January 31

Writing a bash script

Week 4 / February 7

Bash scripting and introduction to Python

Week 5 / February 14

Nmap

Week 6 / February 21

Scripting and/or Nmap

Week 7 / February 28

Wireshark

Week 8 / March 7

Scripting with tshark

Week 9 / March 14 *MIDTERM*

To be continued……. More scripting with .bat and Power Shell