CS284: Computer Security / Information Assurance

Winter 2021 Course Syllabus:

(Last update: 2 Dec 2020)

CRN: 32150
Section: 01 - Evenings (remote)
Time: **Tues 1700-1920 (via teleconference)**
Credits: 4
Grading: A-F
4 Jan – 21 Mar 2021
Classroom & Lab: (via teleconference and online virtual lab)

Instructor: Mark Cantrell

How to contact me:

1. mailto:cantrem@linnbenton.edu – Include CS284 on subject line!
2. Office: (via teleconference, by appointment)
3. Office phone: (unattended – please use e-mail)

Course Description:

This introductory course surveys fundamental principles and modern topics in computer security. It covers privacy concerns, policies & procedures, hardware security, software security, network security, and data security. Multi-level security, Public Key Infrastructure (PKI) and access control are also discussed, along with an basic introduction to cryptography technologies. Lab activities reinforce topics from the recommended study materials (or optional textbook). *CS284 may be taken as part of a student's preparation for the CompTIA Security+ certification exam.*

Important Note: Students who may need accommodations due to documented disabilities, who have medical information which the instructor should know, or who need special arrangements in an emergency should speak with their instructor during the first week of class. If you believe you may need accommodations but are not yet registered with the Center for Accessibility Resources (CFAR), please visit the **CFAR Website** (https://www.linnbenton.edu/student-services/accessibility/index.php) for steps on how to apply for services or call 541-917-4789.

Prerequisites:

1. MTH-095 Intermediate Algebra with a minimum "C" grade.
2. CS-160 Orientation to Computer Science with a minimum "C" grade.

Instructional Approach:

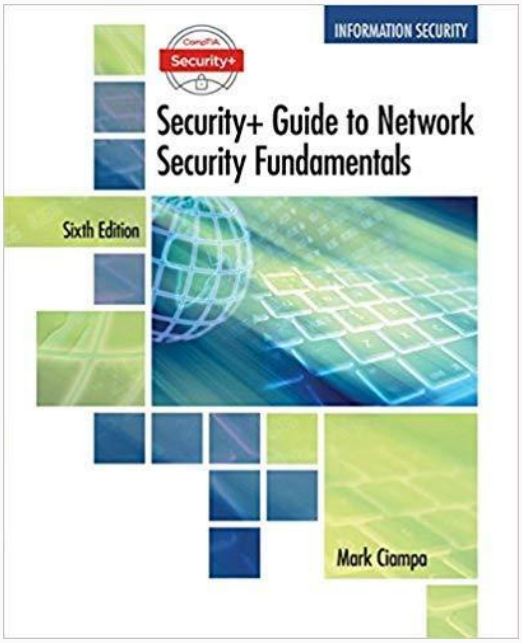
During the Winter 2021 term, for the first time, this course will be conducted as a remote or "distance learning" course. A single weekly teleconference session will be scheduled for the purpose of assisting with lab assignments, answering questions, announcements, and offering supplemental information. But the bulk of the learning experience will be through self-paced videos and/or reading assignments that build foundational knowledge, heavily supplemented by hands-on lab exercises that reinforce the concepts covered in the videos or textbook.

Although this course was previously offered on-campus, the classroom sessions have long been devoted almost entirely to lab sessions. Lab exercises will again be emphasized during the Winter 2021 term, but those exercises will be conducted in an online virtual lab rather than a physical classroom. Specifically, each student will be provided with an authentication certificate that will grant access (via the Internet) to a dedicated set of virtual machines through a Virtual Private Network (VPN) connection. A detailed instruction sheet will walk the students through each lab exercise, and the results will be uploaded to a Learning Management System (LMS) site for credit.

Available Learning Resources and Optional Textbook:

For students who prefer audio and visual presentations, the instructor will provide links to an excellent series of online lectures specifically intended to prepare students for the CompTIA Security+ exam. For those who prefer a traditional textbook, the equally excellent Ciampa text (described below) will cover the same topics, and is also intended to prepare students for the CompTIA Security+ exam.

Again, the weekly teleconferences will be focused on answering questions and assisting with lab exercises, rather than lectures.



Title: Security+ Guide to Network Security Fundamentals 5th or 6th Edition
Author Ciampa
ISBN: 1305093917 or 9781337288781

Internet and Computer Access:

Students will use the Internet ***extensively*** to conduct lab exercises, view instructional videos, search out background information, answer questions, and submit the results of lab exercises. Therefore, "broadband" internet access is essential for success in this course. Generally, any internet connection that is fast enough for streaming video will be fast enough for watching the recommended instructional videos and accessing the virtual lab.

Obviously, Internet access implies access to an Internet connected computer. But this course also requires installing some applications and having administrator access to that computer. At a minimum, each student will need to install client software for OpenVPN and VNC (a multi-platform remote desktop client). It is also useful to have one, or preferably two, USB flash drives. One is usually configured as a Kali Linux[1] boot drive, and the other can be used to transfer and backup files.

Please contact the instructor and describe your detailed situation if your internet or computer access will be constrained in some way.

[1] Kali Linux is a customized Linux distribution designed for computer forensics and penetration testing. It is widely used in the computer security community.

Learning Management System:

An online Learning Management System (LMS) will be used to distribute course materials, make announcements, submit lab assignment results, serve as a venue for student-to-student or student-to-instructor communication, and track course progress. A link to the site will be provided to each student at the start of the term (via email).

Lab Work and Virtual Lab Access:

Each student will be provided, by email at the start of the term, an OpenVPN client configuration file and virtual lab VPN connection instructions. Dedicated virtual machines (VMs) have been deployed for each student, and can be accessed at any time using the VNC remote desktop protocol. The lab has been configured to isolate each student from the subnets and VMs of other students.

Specifics of assigned lab exercises will be posted on the course web site, with additional details announced in class. For credit, the results of each lab will be submitted to the instructor in electronic format, using web-based forms on the course LMS site. Note that these lab assignments, both hands-on and simulated, can be a valuable part of your preparation for any certification exam or employment in the security field. They are also the best way to deepen your understanding of, and lastingly imprint, the concepts explained in the instructional videos or text. Accordingly, the lab work is very heavily weighted in the final grade.

Assignments:

The only graded assignments will be the results of lab exercises, typically consisting of screenshots or documents to be uploaded upon completion of the lab exercise. Students are also expected to view the recommended instructional videos, or read the designated chapter(s) from the optional text, prior to each teleconference and lab exercise. The videos are typically less than five minutes in duration, with an average of about 10 videos required per week. Similarly, chapters in the optional textbook average approximately 40 pages in length, and students will need to read one or two chapters a week in order to finish by the end of the term.

Teleconference Attendance:

A link to the teleconference site will be provided via email before the first day of the term, and teleconference attendance is strongly recommended. Most sessions will include important announcements, information to assist with graded lab sessions, and/or question and answer sessions regarding topics that may be difficult to grasp from watching the instructional videos or reading the textbook alone. Many student Financial

Aid programs also require class attendance, and teleconference sessions should suffice for that purpose.

Please block out the weekly scheduled sessions on your calendar, and connect from a quiet location that is free of distractions. If bandwidth proves to be a problem during any session, please disable your video feed. All students should also mute their microphones when not speaking, in order to avoid distracting others with background noises. It is also wise to use the "raise your hand" tool if it become difficult to get a word in during a crowded session.

Final Exam:

The Final Exam will be conducted online, at the time and place specified in the course schedule (i.e. during the regular scheduled class/teleconference time during finals week). This final comprehensive exam is the only written exam for the course, and will be based entirely on material covered in the videos and textbook. More specifically, it will be very similar in content and difficulty level to the Review Questions at the end of each chapter in the text. Because many students will opt to view the recommended videos instead of purchasing the textbook, the instructor will provide all students with the test pool from which the final exam questions have been selected. Students are strongly encouraged to review the test question pool before the final, regardless of whether they opted to watch the videos or read the text. One of the final teleconference sessions will also be dedicated to a comprehensive review.

Course Grades:

The following weights and scale will be used to determine your overall grade in this course:

Assessment Weights:
Lab Work = 60%
Final Exam = 40%
Grading Scale:
A = 90-100%
B = 80-89%
C = 70-79%

The following policies regarding "Y" and "Incomplete" grades have been standardized in the LBCC Computer Systems Department:

- **"Y" grades:** "It is the responsibility of the student to withdraw from the course if they do not wish to receive a letter grade. The last day to withdraw is listed in the current schedule of classes. There will be no "Y" grades given for this course."
- **"Incomplete" grades:** "If a student has satisfactorily completed most of the course work, but has encountered an emergency which, in the instructor's judgment, is sufficiently serious, the instructor will prepare an Incomplete Agreement specifying the work that the student needs to complete, by the end of the following term, to earn the remaining credit for the course. The Agreement will specify a default grade

based on the work which the student has completed to date. In case the student does not fulfill the Agreement, the default grade will automatically be assigned at the end of the following term."

Academic Honesty Policy:
All students are encouraged to discuss assignments and course materials in general terms with other students (via email, text, or chat if the other students are outside your household and pandemic restrictions are in place). If you need help with the labs or course concepts, you are encouraged to ask the instructor. However, every student is expected to independently complete all graded assignments. The work you turn in to be graded must be *your own* work. Representing another person's work as your own constitutes academic fraud, and has no place at LBCC. No credit will be given for assignments which, in the instructor's judgment, were not created by the student submitting them. In addition, academic dishonesty is grounds for failing a course, or other disciplinary action (including suspension or expulsion) as described in the LBCC Student Standards of Conduct.

Skills required for success in this course:

1. **Time management**: The ability to plan ahead, start assignments early, ask for needed help early, and submit assignments according to specifications and on time. Above all, please keep up with the course schedule! If you get too far behind, it may not be feasible to catch up. All-nighters won't work.
2. A sense of **humor**.

Other Resources:

By any measure, 2020 has been a rough year; and 2021 is likely to start rough as well. But know that better times are ahead. In the mean time, the resources listed in the following (linked) document have been established to support you:

https://docs.google.com/document/d/1cgNhy-Rd35zVZf9J_1gwH-8__XgUjmgVRXZRMVux-oM/edit

Please don't suffer in silence, or wait until a crisis deepens before seeking help. And feel free to email the instructor (with CS284 in the subject line) if you need help and don't know where to turn.