CHATTANOOGA STATE TECHNICAL COMMUNITY COLLEGE
CHATTANOOGA, TENNESSEE
BUSINESS & INFORMATION SYSTEMS DIVISION
COURSE SYLLABUS
NW 215 Firewalls and Network Security

Instructor: **Class Hours/Credit Hours: 3/3**
Phone: **Semester:**
E-mail: **Office:**

Catalog Course Description

This course provides a comprehensive overview of building and maintaining firewalls in a business environment. Specific topics covered include: planning/design, security, configuration, packet filtering, proxy servers, authentication, encryption, and VPNs.

Textbook: Michael E. Whitman, Herbert J. Mattord, Richard D. Austin and Greg Holden, _Guide to Firewalls and Network Security: with Intrusion Detection and VPNs,_ Course Technology, Incorporated, 2009, ISBN 0-4394-2016-0

I   PROGRAM AND COURSE STUDENT LEARNING OUTCOMES ASSESSED:

PSLO1:   **Apply problem solving techniques to develop the necessary logic for the solution of a problem.**
CSLO2:   Developing a Security Policy

PSLO3:   **Demonstrate, through verbal and written means, knowledge of computer terminology and concepts, a historical perspective of the computer industry, and a basic understanding of emerging trends.**
CSLO2:   Developing a Security Polic

PSLO4:   **Use hardware (computers, peripherals and related equipment, such as networks, clusters, and other emerging technologies), and software (application, system and internet- and web-based).**
CSLO1:   Firewall Planning and Desig
CSLO3:   Firewall Configuration Strategies
CSLO5:   Working with Proxy Servers and Application-Level Firewalls

PSLO6:   **Demonstrate an ability to work effectively in a team environment.**
CSLO3:   Firewall Configuration Strategies
CSLO4:   Packet Filtering
CSLO5:   Working with Proxy Servers and Application-Level Firewalls

PSLO7:   **Develop a view, demonstrated through projects and oral and written communications, of the societal impact of technology, and issues related to appropriate use, ethics, security and privacy**.
CLSO1:   Firewall Planning and Design
CSLO4:   Packet Filtering
CSLO5:   Working with Proxy Servers and Application-Level Firewalls
CSLO6:   Encryption and Firewalls
CSLO7:   Choosing a Bastion Host
CSLO8:   Setting up a Virtual Private Network
CSLO9:   Building a Network Firewall and VPN
CSLO10:   Contingency Planning
CSLO11:   Intrusion Detection and Prevention Systems
CSLO12:   Digital Forensics

II. ADDITIONAL INDICATORS OF STUDENT ACQUISITION CSLO's:

Ind1   How to apply the concepts to develop a Security Policy. (PSLO 1,3 – CSLO 2)

Ind2   Understand and apply the concepts of how to develop, implement and configure a firewall. (PSLO4 – CSLO 1,3,5)

Ind3   Know the steps involved in setting up a VPN (server and Client)and configure to make it secure. (PSLO4 – CSLO 1,3,5)

Ind4   Understand which devices perform Packet Filtering and setting rules for it.(PSLO7 – CSLO 1,4,5,6,7,8,9,10,11,12)

Ind5   Know the goals of Proxy Servers, configuration and choosing a Proxy Server. (PSLO7 – CSLO 1,4,5,7,8)

Ind6   Understand the Authentication process. (PSLO7 – CSLO 1,4,5,6,7,8,9,10,11,12)

Ind7   Know why your Firewall needs to use Encryption and be able analyze Popular Encryption Schemes. (PSLO3,4 – CSLO 1,2,3,5)

Ind8   Install a Bastion host, selecting, positioning and configuration of your Bastion Host (PSLO3,6 – CSLO 1,2,4,5).

III. ASSESSMENT WEIGHTS AND GRADING SCALE
ASSESSMENTS:

Chapter Assignments

Case Studies and Chapter Tests
    Chapter 1 – (PSLO1,3 - CSLO2)
    Chapter 2 - (PSLO1,3 - CSLO2)
    Chapter 3 – (PSLO1,3 - CSLO 2)
    Chapter 4 – (PSLO1,3 - CSLO2)
    Chapter 5 - (PSLO4 - CSLO 1, 3, 5
    Chapter 6 – (PSLO4,7 - CSLO 3, 4, 5)
    Chapter 7 – PSLO4,7 - CSLO 3, 4, 5)
    Chapter 8 – (PSLO7 - CSLO 6, 7)
    Chapter 9 – (PSLO1,4,7 - CSLO 1, 5, 6)
    Chapter 10 – (PSLO7 - CSLO 8, 9, 10)
    Chapter 11 – (PSLO7 - CSLO 8, 9, 10, 11)
    Chapter 12 – (PSLO7 - CSLO 10, 11, 12)
    Chapter 13 – PSLO7 - CSLO 10, 11, 12)
    Chapter 14 – (PSLO7 - CSLO 10, 11, 12)

Firewall Lab Simulation Project: (PSLO1,3,4,7 - CSLO 1 – 12)

Final Exam – (PSLO1,3,4,7 - CSLO 1 – 12)

Grades are based on a total of 6,460 pts.

Students will complete 14 case studies that 2,660 pts. = 190 pts. ea (PSLO1,3,4,7 - CSLO 1 – 12)
Students will complete 14 chapter tests that total 2,800 pts. = 200 pts. ea. (PSLO1,3,4,7 - CSLO 1 – 12)
Students will a Firewall Lab Simulation that toals 500 pts (PSLO1,3,4,7 - CSLO 1 – 12)
Students will complete a Final Group Project (Final Exam) worth 500 pts. (PSLO1,3,4,7 - CSLO 1 – 12)

Grade Weight: FINAL GRADE IS BASED ON A TOTAL OF 6,460 pts. divided by the total points the student has earned

IV. ALIGNMENT OF ASSESSMENTS WITH, COURSE STUDENT LEARNING OUTCOMES:

CSLO1	CSLO2	CSLO3	CSLO4	CSLO5	CSLO6	CSLO7	CSLO8	CSLO9	CSLO10	CSLO11	CSLO12
Case Studies ch. 5 & 9 and chapter tests	Case Studies ch. 1 – 4 and chapter tests	Case Studies ch. 5 – 7 and chapter tests	Case Studies ch. 5 – 7 and chapter tests	Case Studies ch. 5 – 7, 9 and chapter tests	Case Studies ch. 8, 9 and chapter tests	Case Studies ch. 8 and chapter tests	Case Studies ch. 10, 11 and chapter tests	Case Studies ch. 10, 11 and chapter tests	Case Studies ch. 11, 12, 13, 14 and chapter tests	Case Studies ch.12 – 14 and chapter tests	Case Studies ch. 12 – 14 and chapter tests

V. Topics:

Unit	Topic

1. Introduction to Information Security
2. Introduction to Networking
3. Security Policies, Standards, and Planning
4 . Network Vulnerabilities
5. Firewall Planning and Design
6. Packet Filtering
7. Working with Proxy Servers & Application-Level Firewalls
8. Firewall Configuration & Administration
9. Encryption & Firewalls
10. Authenticating Users
11. Setting up a Virtual Private Network
12. Contingency Planning
13. Intrusion Detection & Prevention Systems
14. Digital Forensics

Final grades will be determined using the current college policy concerning grades as found in the current college catalog

Grading Scale:

90 – 100 = A
80 – 89 = B
70 – 79 = C
65 – 69 = D
elow 65 - = F

o Course Delivery Format

Faculty may require on-line activities and assignments to include on-line tests and submission of all written and on-line communications. The extent of on-line activities/assignments may vary by course but will be specified on the syllabus.
(Place the appropriate following Format descriptions into the syllabus)

Hybrid Format – This format requires significant online activity. Students in hybrid classes must access course content and assessments using the Internet in order to pass the class, whether it meets full-time or part-time in the classroom. Faculty need not hand out a copy of the syllabus and any other required course material, including their contact information.

College Policies

This class is governed by the policies and procedures stated in the current Chattanooga State Student Handbook. Additional or more specific guidelines may apply.

ADA Statement

Students who have educational, psychological, and/or physical disabilities may be eligible for accommodations that provide equal access to educational programs and activities at Chattanooga State. These students should notify the instructor immediately, and should contact Disabilities Support Services within the first two weeks of the semester in order to discuss individual needs. The student must provide documentation of the disability so that reasonable accommodations can be requested in a timely manner. All students are expected to fulfill essential course requirements in order to receive a passing grade in a class, with or without reasonable accommodations.

Disruptive Students
The term "classroom disruption" means – student behavior that a reasonable person would view as substantially or repeatedly interfering with the activities of a class. A student who persists in disrupting a class will be directed by the faculty member to leave the classroom for the remainder of the class period. The student will be told the reason(s) for such action and given an opportunity to discuss the matter with the faculty member as soon as practical. The faculty member will promptly consult with the division dean and the college judicial officer. If a disruption is serious, and other reasonable measures have failed, the class may be adjourned, and the campus police summoned. Unauthorized use of any electronic device constitutes a disturbance. Also, if a student is concerned about the conduct of another student, he or she should please see the teacher, department head, or division dean.

Affirmative Action
Students who feel that he or she has not received equal access to educational programming should contact the college affirmative action officer.

Academic Integrity/Academic Honesty
In their academic activities, students are expected to maintain high standards of honesty and integrity. Academic dishonesty is prohibited. Such conduct includes, but is not limited to, an attempt by one or more students to use unauthorized information in the taking of an exam, to submit as one's own work, themes, reports, drawings, laboratory notes, computer programs, or other products prepared by another person, or to knowingly assist another student in obtaining or using unauthorized materials. Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of academic misconduct, either directly or indirectly through participation or assistance, are immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions, which may be imposed through the regular institutional procedures as a result of academic misconduct, the instructor has the authority to assign an "F" or zero for an activity or to assign an "F" for the course.

The instructor reserves the right to modify this syllabus in writing during the course of the semester.
   Email Communication

   Please note all communication with instructors about your course work should be through the eLearn Email system. For assistance on how to use the eLearn Email tool go to this url:
   http://river.chattanoogastate.edu/orientations/Student_PDFs/eLearn_eMail_aug09.pdf

   For all other communication the official email system used by the college is through Tiger Mail. This is accessible by clicking the blue paw icon from the top right hand side of your Tiger Web home page
   https://tigerweb.chattanoogastate.edu/cp/home/display/login

   The instructor reserves the right to modify this syllabus in writing during the course of the semester.

Instructor Policies
Instructor Absence
In the event of a scheduled instructor absence, a substitute instructor, as alternate out-of-class assignment, or a lab assignment appropriate to the class will be provided. In case of an emergency instructor absence, every effort will be made to provide an appropriate out-of-class assignment or lab.
Class Policies

- o Students are expected to read each assigned chapter according to the schedule posted on eLearn (see Course Content module on eLearn).
- o Homework assignments, which may require the use of computer and Internet skills, will be due **no later than** the due date posted on eLearn. The lowest assignment score will be dropped.
- o All output from assignments should adhere to industry and scholastic standards with respect to grammar, language usage, spelling and format.
- o Quizzes may be scheduled in class, or posted in the Assessments module on eLearn. Those available on eLearn **must be completed by due date** For classroom-based sections, quizzes scheduled in class may only be taken on that class date. **No makeup** quizzes will be given. The lowest quiz score will be dropped.
- o It is the student's responsibility to be in attendance and on time for scheduled exams.
- o Each student must produce his or her own work, except in those cases where students have permission to work together, such as in group projects.
- o All work must be submitted in electronic form using a format compatible with Microsoft, and posted to the **appropriate** Assessment, Discussion or Dropbox tool on eLearn. **Work submitted to an incorrect Discussion topic, or Dropbox, will NOT be graded.**
- o Except where instructed otherwise, students will not email assignments to instructor. When email is requested, students will use the Email tool on eLearn