COURSE NUMBER: ISS 221  
COURSE NAME: Network Defense & Countermeasures  
MEETING PLACE: Random Online  
DIVISION: Business, Computing & Applied Technology  
LECTURE/DISCUSSION: Total Contact Hours – 40  
SEMESTER CREDIT HOURS: 3

Faculty and CIS web pages available through HCC Home Page: www.harford.edu

Required Course Textbook:  
Network Defense and Countermeasure: Principle and Practices  
Author or Editor: William (Chuck) Easttom, II  
Publisher: Prentice Hall  
ISBN: 0131711266

COURSE DESCRIPTION
This course focuses on the architecture for network defense including network attacks and defenses, firewall systems design and configuration, virtual private network (VPN) configuration, designing and configuring intrusion detection systems, intrusion signature, and network security policies and configurations. Prerequisite: ISS220 or permission of the instructor. Course fee.
Student Learning Objectives (previously known as course objectives) Linked to Relevant Academic Outcomes

Upon satisfactory completion of this course, the student will be able to:

1. Identify the basic components of a layered structure for network defense architecture and describe access control objectives and auditing concepts.  (Academic outcomes supported by this learning objective: Communication, Science and Technology, Critical Thinking)

2. Configure and operate firewalls for various operating systems. (Academic outcomes supported by this learning objective: Communication, Science and Technology, Critical Thinking, Interpersonal Skills)

3. Describe VPNs and security issues related to them. (Academic outcomes supported by this learning objective: Communication, Science and Technology)

4. Configure and operate a network-based and host-based intrusion detection system (Academic outcomes supported by this learning objective: Communication, Science and Technology, Critical Thinking, Interpersonal Skills)

5. Identify the core concepts of Transmission Control Protocol/Internet Protocol (TCP/IP) packet and signature analysis with the goal of intrusion detection. (Academic outcomes supported by this learning objective: Communication, Science and Technology, Critical Thinking)

6. Configure and implement security policies, including risk analysis. (Academic outcomes supported by this learning objective: Communication, Science and Technology, Critical Thinking)

Federal Credit Hour Definition Statement:

For a 15 week semester, each credit hour represents one hour of classroom or direct faculty instruction and a minimum of two hours of outside class-work per week. For terms that are less than 15 weeks, students should also spend a minimum of two hours outside of class for every hour in class. Academic activities include, but are not limited to reading, writing, studying, research, and completing worksheets. In addition, at least an equivalent amount of out of class work is required for laboratory work, internships, practica, studio work, etc.

At Harford Community College, for all credit courses, students are expected to spend a minimum of 37.5 combined hours of direct instructional time and related coursework time per credit hour. This course is a 3 credit course. This course achieves the minimum of 112.5 hours of combined instructional time by requiring 37.5 hours of direct instructional time and 75 hours of student work outside of direct instructional time.
**Grading Standards:**
The final course grade is comprised of the student's mastery of course requirements. Course grades are based upon the following total mastery level:

- **A = 91-100%**
- **B = 81-90%**
- **C = 71-80%**
- **D = 61-70%**
- **F = 60% and below**

- Mid-Term Exam = 30%
- Final Exam = 30%
- Discussion Topics, Participation & Projects = 39%
- Introduction Posting = 1%

**Course Outline**

I. **Network Defense Fundamentals**
   A. Network Defense
   B. Defensive Technologies
   C. Objectives of Access Control
   D. Impact of Defense
   E. Concepts of Network Auditing

II. **Designing Firewall Systems**
   A. Firewall Components
   B. Firewall Policy
   C. Rule Sets and Packet Filters
   D. Proxy Servers
   E. The Bastion Host
   F. The Honeypot

III. **Configuring Firewalls**
   A. Firewall Implementation Practices
   B. Installing, Configuring, and Monitoring Firewalls
   C. IP Chains Concepts
   D. Implementing Firewall Technologies

IV. **Configuring Virtual Private Networks (VPN)**
   A. VPN Fundamentals
   B. IP Security Protocol (IPSec)
   C. VPN Security
   D. Configuring a VPN

V. **Cryptography**
   A. Symmetric Encryption
   B. Asymmetric Encryption
   C. Implementation of Cryptography
   D. Strengths and Vulnerabilities
   E. Public Key Infrastructure (PKI)
VI. OPERATIONAL SECURITY
   A. Physical Security and Access Controls
   B. Social Engineering
   C. Business Continuity
   D. Disaster Recovery
   E. Security Management

VII. POLICIES AND PROCEDURES
   A. Overview of Security Law
   B. Security Policy Cycle
   C. Risk Identification
   D. Compliance Monitoring and Evaluation
   E. Ethics Policies

COURSE POLICIES:
HCC students are bound by the academic policies outlined in the most current HCC Catalog*. It is the student’s responsibility to review these policies prior to the start of each semester.

INSTRUCTIONAL METHODS:
To achieve student learning objectives, instruction includes lecture/demonstration, discussion, cooperative learning, and lab assignments.

ATTENDANCE AND PARTICIPATION:
Regular and punctual attendance is required of all students. In the case of absence due to emergency (illness, death in the family, accident), religious holiday, or participation in official College functions, it is the student’s responsibility to confer with the instructor about the absence and missed course work. Since the majority of assignments are to be completed and/or discussed during the class sessions, attendance, punctuality and participation in class are key components to success in this course.

Exams:
Mid-term and Final Exams will be completed during the semester. Each exam covers a specific set of chapter of the course textbook and is worth 60% of the overall course grade. All exams must be completed on the course website. Each online exam will be available to students for an eighteen (18) hour period (6 AM to 11:59 PM Eastern Time) on the date specified in the class schedule. The exams will no longer be available once this time period ends. Each quiz consists of multiple choice and matching questions. Exam makeups are not permitted.

DISCUSSION TOPICS RESPONSES:
Two discussion topic question sets will be posted for each course textbook chapter in the website “Discussion Forum” area. Students are required to provide detailed and thorough responses to each set of discussion topic questions.
DISCUSSION TOPIC PARTICIPATION:
Students are also required to provide a minimum of two substantive responses to fellow student postings in each discussion topic area. Substantive responses must be based upon course content, theory or personal experiences...not mere opinion. A simple “I agree” or “Great posting” will not count as a substantive response. Substantive responses should also include appropriate documentation and/or citations.

STUDENT BEHAVIOR:
Students will be familiar with and adhere to the “Code for Student Rights, Responsibilities and Conduct”, which can be found on OwlNet under the My Academic Life Tab or in the HCC online catalog. The Code outlines prohibited conduct, the disciplinary process, and possible sanctions. Students found responsible for violating the Code will have a disciplinary record that will remain in the Office of the Associate Vice President for Student Development for three years.

DISABILITY SUPPORT SERVICES:
HCC is committed to serving students who have documented physical, learning, psychological, or other disabilities. Students who have a disability are responsible for contacting Disability Support Services at 410-836-4402 to discuss their needs for accommodations. All information shared with Disability Support Services will be held in confidence.

COMPUTER ETHICS:
Each student is responsible for knowing the college’s policy relating to ethical behavior regarding all intellectual property and in using the computer. Copying or using another’s work, including computer files, is both illegal and unethical. See the Student Handbook.

ACADEMIC DISHONESTY:
Students will be familiar with and adhere to the policy governing academic dishonesty and its sanctions as outlined in the Code for Student Rights, Responsibilities and Conduct, which can be found on OwlNet under the My Academic Life Tab or in the HCC online catalog.

Students who commit acts of academic dishonesty (e.g., cheating, fabrication, facilitating academic dishonesty, and plagiarism) will be subject to formal disciplinary action and will receive a grade of F on the test, quiz, or assignment involved and, at the discretion of the instructor; the student may receive an F for the course. This includes incidents that occur in the Test and Assessment Center. In addition, the student will be referred to the Associate Vice President for Student Development for a Student Code Violation.

SYLLABUS MODIFICATION:
The instructor reserves the right to modify and/or change the course syllabus with reasonable notification to students.
COURSE REQUIREMENTS:
Regular Punctual Attendance, Lab Assignments, Periodic Quizzes, Midterm Exam, Class & Homework Assignments & Final Exam

STUDENT RESPONSIBILITIES
- Students are responsible for completing all reading and writing assignments by the scheduled due dates. Because effective writing usually comes through thoughtful revision, students should revise and edit all work before submission. Students will be given the opportunity to revise some assignments for a potentially higher grade.
- To pass this course, students must complete all assignments, revise and correct them as directed, and maintain a folder or portfolio of course work. At the end of the semester, students will submit this folder to the instructor. The instructor will keep folders until the deadline for grade appeal.
- Students are responsible for recognizing and accepting that when they put their name on any piece of work they are taking a vow that the work is theirs alone. Academic dishonesty of any form is unacceptable.
- Students are responsible for reading, discussing, and revising their work.
- Students are responsible for providing thoughtful peer evaluation.
- Student participation is crucial in this course and will be evaluated as part of your grade.
- Much of our work in class will be collaborative. It is therefore particularly important that all of your work be completed on time. You will handicap not only yourself but your classmates if you are not prepared.

MAKE-UP POLICY: PLEASE READ CAREFULLY!
Midterm and Final Exams: There will be no make-up exams except through arrangement with the instructor prior to the exam (and then only for reasons deemed valid enough to require the making-up of a new exam, which may be more difficult.)

CLASS PROJECTS AND ASSIGNMENTS:
All reading assignments (lecture notes and course textbook) must be completed during the week in which the applicable material is covered.

DUE DATES:
To receive full credit, all assignments must be handed in by the due date. An assignment will be accepted up to one week late and points will be deducted as follows:

1. One week late: 1/2 of overall points.
2. Thereafter, 0 points

No assignment will be accepted after that. It is the student’s responsibility to justify any absences and make up all assignments.
INCLEMENT WEATHER:
If any classes have to be canceled, tests will be rescheduled for the next class period; assignments will be collected during the next class period. College Weather Number: 443-412-2322.

HARFORD COMMUNITY COLLEGE

STUDENT SERVICES

Please refer to the following:

Go to Owlnet, My Academic Life Tab main page, top right under Quick Links - right under “Ask for Assistance”
Click on Link the Student Services Hours & Locations

http://www.harford.edu/studentservices/docs/Student_Services.pdf