CIS 280   Network Security

I. CIS 280 Network Security – 3 Semester Hours

II. Course Description
This course provides a study of threats to network security and methods of securing a computer network from such threats. Topics included in this course are security risks, intrusion detection, and methods of securing authentication, network access, remote access, Web access, and wired and wireless network communications. Upon completion, students will be able to identify security risks and appropriate counter measures.

III. Prerequisite
CIS 277 and CIS 278

IV. Textbook
Textbook: Fundamentals of Network Security
Publisher: McGraw-Hill
Author: Maiwald, Eric

V. Course Objectives
1. Identify threats to network security and detect intrusion.
2. Identify methods of securing network authentication, network access, remote access, and Web access.
3. Identify methods of securing network communications.

VI. Course Outline of Topics
1. Identify threats to network security and detect intrusion.
    a. Network security terms and concepts
    b. Risks associated with authentication
        i. Authentication protocols
        ii. Certificates
        iii. Usernames and Passwords
        iv. Biometrics
    c. Risks associated with services, protocols, and the network infrastructure
        i. Services
        ii. Protocols
        iii. Network infrastructure
    d. Network intrusion methods
        i. DOS / DDOS (Denial of Service / Distributed Denial of Service)
        ii. Back Door
        iii. Spoofing
        iv. Man in the Middle
        v. Replay
        vi. TCP/IP Hijacking
        vii. Weak Keys
        viii. Mathematical
        ix. Social Engineering
        x. Password Guessing
        xi. Brute Force
        xii. Dictionary

xiii. Software Exploitation
  e. Risks associated with malicious code
    i. Viruses
    ii. Trojan Horses
    iii. Logic Bombs
    iv. Worms
  f. Auditing, logging, and system scanning
2. Identify methods of securing network authentication, network access, remote access, and Web access.
  a. Securing authentication
  b. Firewalls
  c. Public Key Infrastructure (PKI)
    i. Certificate authority
    ii. Digital certificates
  d. Remote access technologies
    i. Virtual private networks (VPN)
    ii. RADIUS (Remote Authentication Dial-In User Service)
    iii. IPSEC (Internet Protocol Security)
    iv. L2TP
    v. PPTP
  e. Internet security concepts and protocols
    i. Secure Sockets Layer (SSL)
    ii. Hypertext Transfer Protocol Over Secure Sockets Layer (HTTPS)
    iii. Pretty Good Privacy (PGP)
    iv. Secure Multipurpose Internet Mail Extension (S/MIME)
3. Identify methods of securing network communications.
  a. Physical network infrastructure security
  b. Establishing security policies
  c. Data encryption
  d. Securing wireless communication
  e. File and folder level security
    i. Sharing
    ii. File system security
  f. Hardening
    i. Updates
      1. Hotfixes
      2. Service Packs
      3. Patches
      4. Firmware
    ii. Securing servers
    iii. Securing clients
  g. System backup

VII. **Evaluation and Assessment**

Evaluation and assessment will be determined by the instructor and specified on the instructor's class syllabus. Grades will be based upon following scale: $A = 90 - 100\%$, $B = 80 - 89\%$, $C = 70 - 79\%$, $D = 60 - 69\%$, and $F =$ below 60%.

VIII. **Attendance**

Students are expected to attend all classes for which they are registered. Students who are unable to attend class regularly, regardless of the reason or circumstance, should withdraw from that class before poor attendance interferes with the student's ability to achieve the objectives required in the course. Withdrawal from class can affect eligibility for federal financial aid.

IX. **Statement on Discrimination/Harassment**
The College and the Alabama State Board of Education are committed to providing both employment and educational environments free of harassment or discrimination related to an individual's race, color, gender, religion, national origin, age, or disability. Such harassment is a violation of State Board of Education policy. Any practice or behavior that constitutes harassment or discrimination will not be tolerated.

X. **Americans with Disabilities**
The Rehabilitation Act of 1973 (Section 504) and the Americans with Disabilities Act of 1990 state that qualified students with disabilities who meet the essential functions and academic requirements are entitled to reasonable accommodations. It is the student's responsibility to provide appropriate disability documentation to the College. The ADA Accommodations Office is in FSC 305 (205-856-7731).