



Course Number and Title: ITN 274 System & Network Defense

Campus Location:

Georgetown, Dover, Stanton, Wilmington

Effective Date:

2020-51

Prerequisite:

ITN 150, ITN 170

Co-Requisites:

none

Course Credits and Hours:

3.00 credits

2.00 lecture hours/week

2.00 lab hours/week

Course Description:

This course prepares students to design and implement secure systems and networks. Topics include firewalls, Virtual Private Network (VPN), intrusion detection and prevention systems (IDS/IPS), and incident response. Students will simulate architectures of typical corporate network environments.

Required Text(s):

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:

Access to high-speed Internet.

Schedule Type:

Classroom Course

Video Conferencing

Web Conferencing

Hybrid Course

Online Course

Disclaimer:

none

Core Course Performance Objectives (CCPOs):

1. Explain the purpose and importance of hardening as it relates to confidentiality, integrity, and availability of information. (CCC1,2,4; PGC 1,3,4)
2. Create firewall configurations and perform administration. (CCC 2; PGC 1,3)
3. Explain and evaluate proxy servers. (CCC 1,2; PGC 1,3)
4. Analyze and implement encryption schemes. (CCC 1,2; PGC 1,3)
5. Evaluate and select an identity management structure. (CCC 1,2,3; PGC 1,3)
6. Analyze and evaluate the setup of a Virtual Private Network (VPN). (CCC 1,2; PGC 1,3)
7. Explain and configure intrusion detection and prevention systems (IDS/IPS). (CCC 1,2; PGC 1,3)
8. Design a network architecture that supports the concept of defense in depth. (CCC 1,2,3; PGC 1,3)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):

Upon completion of this course, the student will:

1. Explain the purpose and importance of hardening as it relates to confidentiality, integrity, and availability of information.
 1. Define *defense in depth*.
 2. Explain the function of defense mechanisms.
 3. Identify methods used to harden networked systems.
2. Create firewall configurations and perform administration.
 1. Identify common misconceptions about firewalls.
 2. Compare and contrast types of firewalls.
 3. Evaluate and recommend hardware and/or software for a firewall application.
 4. Identify and implement different firewall configuration strategies given specific security policy requirements.
 5. Modify existing firewall configurations to meet new needs and threats.
3. Explain and evaluate proxy servers.
 1. Describe the purpose and function of proxy servers.
 2. Compare and contrast types of proxy servers.
 3. Evaluate and recommend options for proxy server configuration.
 4. Identify and implement different proxy servers given a specific scenario.
 5. Deploy a reverse proxy server.
4. Analyze and implement encryption schemes.
 1. Explain the purpose and function of digital certificates.
 2. Describe secure socket layer (SSL), pretty good privacy (PGP), and other popular encryption schemes.
 3. Select and implement the appropriate encryption scheme to ensure confidentiality of data at rest.
5. Evaluate and select an identity management structure.
 1. Explain the role of identity management in enterprise environments.
 2. Describe the methods of securing privileged access.
 3. Configure a centralized authentication solution in a networked environment.
 4. Select an identity management design given a scenario.
6. Analyze and evaluate the setup of a Virtual Private Network (VPN).
 1. Describe the different types of VPNs.
 2. Explain the components and essential operations of VPNs.
 3. Select the appropriate tunneling protocol for a VPN.
 4. Enable secure remote access for individual users via a VPN.
7. Explain and configure intrusion detection and prevention systems (IDS/IPS).
 1. Describe the various technologies used to implement intrusion detection and prevention.
 2. Configure intrusion detection system (IDS) and intrusion prevention system (IPS) rules.
 3. Explain the importance and function of honey pots and honey nets.
8. Design a network architecture that supports the concept of defense in depth.
 1. Evaluate and select defensive mechanisms to meet requirements of a given scenario.
 2. Create a secure network design incorporating system and network defense strategies.

Evaluation Criteria/Policies:

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):

1. Solve technology-related problems using critical thinking and troubleshooting skills.
2. Articulate the role of the technology professional in organizations to support the ethical use of information technology.
3. Apply fundamental security concepts and strategies for maintaining and securing information technology.
4. Read and interpret technical information and effectively communicate to a wide range of audiences using oral, print, and multimedia strategies.
5. Demonstrate the importance of lifelong learning that empowers personal and professional growth.

Disabilities Support Statement:

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.