Course Number and Title: ITN 251 IT Networking II

Campus Location:
Georgetown, Dover, Stanton, Wilmington

Effective Date:
2020-51

Prerequisite:
ITN 150

Co-Requisites:
None

Course Credits and Hours:
3.00 credits
2.00 lecture hours/week
2.00 lab hours/week

Course Description:
This course provides the essential knowledge and skills to perform the fundamentals of design, installation, maintenance, and support of computer networks. Topics include operation of IP data networks and Transmission Control Protocol/Internet Protocol (TCP/IP) networking models. Students learn to perform router and switch configurations. Additionally, this course prepares students for related industry certifications.

Required Text(s):
Obtain current textbook information by viewing the campus bookstore - 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 operation of IP data networks. (CCC 1 ; PGC 3)
2. Configure LAN switching technologies. (CCC 1, 2, 6 ; PGC 1,2, 3, 4)
3. Explain IP addressing and schema. (CCC 1, 6 ; PGC 1)
4. Explain and configure IP routing technologies. (CCC 1, 5 ; PGC 1, 4, 5)
5. Configure IP services. (CCC 1, 2, 6 ; PGC 1,2, 3, 4)
6. Configure network device security. (CCC 1, 2, 6 ; PGC 1, 2, 3, 4)
7. Apply best practices to network troubleshooting. (CCC 1, 2, 3, 6 ; PGC 1, 2, 4)

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 operation of IP data networks.
   1. Recognize the purpose and functions of various network devices.
   2. Differentiate between networking components.
   3. Identify the impact of common applications on the network.

2. Configure LAN switching technologies.
   1. Identify basic switching concepts and the operation of Cisco switches.
   2. Configure and verify initial switch configuration, including remote access management.
   3. Compare and contrast enhanced switching technologies.
   4. Configure and verify VLANs.
   5. Configure and verify trunking on Cisco switches.
   6. Configure and verify enhanced Spanning Tree Protocol (STP) operation.

3. Explain IP addressing and schema.
   1. Determine an IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment.
   2. Determine an IPv4 addressing scheme using variable length subnet mask (VLSM) and summarization to satisfy addressing requirements in a LAN/WAN environment.
   3. Describe the technologies for running IPv6 in conjunction with IPv4.
   4. Describe IPv6 address types.

4. Explain and configure IP routing technologies.
   1. Describe routing concepts.
   2. Describe the boot process of Cisco IOS routers.
   3. Use command line interface (CLI) for router configuration.
   4. Configure various router interfaces.
   5. Configure and verify router configuration and network connectivity.
   6. Manage Cisco IOS Files.
   9. Configure and verify interVLAN routing (router on a stick).
   10. Configure switch virtual interfaces (SVI).

5. Configure IP services.
   2. Describe the types, features, and applications of access control lists (ACLs).
   3. Configure and verify ACLs in a network environment.
   4. Configure and verify network address translation (NAT) for given network requirements.
   5. Configure and verify network time protocol (NTP) as a client service.
   6. Compare and contrast high availability technologies.
   7. Configure and verify Syslog.

6. Configure network device security.
   1. Configure and verify network device security features.
   2. Configure and verify Switch Port Security features.
   3. Configure and verify ACLs to filter network traffic.

7. Apply best practices to network troubleshooting.
   1. Identify and correct common network problems.
   2. Troubleshoot problems associated with IP addressing and host configurations.
   3. Troubleshoot routing issues.
   4. Troubleshoot routing protocol issues.
   5. Troubleshoot ACL issues.
   6. Troubleshoot layer 2 issues.

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:

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<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>92 – 100</td>
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<td>B</td>
<td>83 – 91</td>
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<tr>
<td>C</td>
<td>75 – 82</td>
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<tr>
<td>F</td>
<td>0 – 74</td>
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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 web page or visit the campus Advising Center.