



Course Number and Title: CIS 199 – Data Communications & Networking

Campus Location:

Georgetown, Dover, Wilmington

Effective Date:

2018-51

Prerequisite:

CIS 120, CIS 141, SSC 100 or concurrent

Co-Requisites:

None

Course Credits and Hours:

3.00 credits

2.00 lecture hours/week

2.00 lab hours/week

Course Description:

This course covers fundamental data communications, concepts and components, networking models, transmission rules, local area network (LAN) and wide area network (WAN) protocols, wiring and distribution, topologies, and error detection and correction methods.

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:

None

Schedule Type:

Classroom Course

Disclaimer:

None

Core Course Performance Objectives (CCPOs):

1. Explain the basic concepts of data communications and data communication protocols. (CCC 1, 2, 6; PGC 6)
2. Examine the functions of the communication layers between network communication models. (CCC 1, 2, 6; PGC 6)
3. Compare and contrast various network topologies. (CCC 1, 6; PGC 6)
4. Explain the functionality of networking devices. (CCC 1, 2, 4, 6; PGC 6)
5. Construct a client-server communication program. (CCC 2, 4, 6; PGC 1, 2, 6)

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 basic concepts of data communications and data communication protocols.
 1. Match networking layers with appropriate protocols.
 2. Describe the characteristics of an ideal network.
 3. Distinguish between types of networking protocols.
 4. Identify different methods of measuring network performance.
 5. Discuss the different error prevention, detection, and correction methods.
 6. Explain the function of Transport Control Protocol (TCP) and User Datagram Protocol (UDP) at the transport layer.
 7. Identify the function of media access control (MAC) addresses in a network.
 8. Explain the function of Internet Protocol version 4 (IPv4) and Internet Protocol version 6 (IPv6).
 9. Describe the different types of addressing used in networking, and state their functions and the layers at which they operate.
 10. Label Ethernet and wide area network (WAN) architectures.
 11. Describe basic cryptographic methods.
2. Examine the functions of the communication layers between network communication models.
 1. Describe the layers of Open Systems Interconnection (OSI) networking model.
 2. Describe the layers of the Transport Control Protocol/Internet Protocol (TCP/IP) networking model.
 3. Discuss the functions of the OSI and TCP/IP network communication models.
 4. Distinguish between the functions of the layers of the OSI and TCP/IP network communication models.
3. Compare and contrast various network topologies.
 1. Discuss the advantages and disadvantages of different network topologies.
 2. Discuss the advantages and disadvantages of physical layer media used in networking.
 3. Select the appropriate network topology for a given scenario.
4. Explain the functionality of networking devices.
 1. Discuss the function of networking devices such as routers and switches, and state which network layers they operate.
 2. Describe how switches build and use switching tables.
 3. Describe how routers build and use routing tables.
 4. Capture network packets.
5. Construct a client-server communication program.
 1. Explain the concept of socket communications.
 2. Test different existing client-server communications applications.
 3. Create communication programs to connect clients to a server.

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. Install, configure and secure computer applications and operating systems.
2. Design, write, and debug computer programs.
3. Design and integrate databases in computer programs
4. Analyze and design complex computer applications to solve business problems.
5. Integrate the principles of the Internet into web development.
6. Incorporate the principles of networking and information security in computer application development.

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.