CSCI 3400
Networking Fundamentals

Credit Hours: 3
Contact Hours: 4

Course Coordinator: Chris Wallace

Text(s):
- *Business Data Communications*, Agrawal, 2011 (Required)

Catalog Description:
A study of concerns related to the operation of computer networks. Topics include incentives for computer networking, the OSI model of network operation, network media, theory and practice of local area networking, bridging, switching, and routing. Principles of TCP/IP network operation.

Prerequisite(s): CSCI 1260, CSCI 1400, CSCI 1900, and CSCI 2150

CS: REQUIRED
IS: REQUIRED
IT: REQUIRED

Course Outcomes:

- Describe the basic hardware and software components of computer networking. - ETSU Outcomes 3b, IT-2; ABET Outcomes i, IT-j
- Describe the OSI networking model. - ETSU Outcomes 3b, IT-2; ABET Outcomes i, IT-l
- Describe the major responsibilities of each layer of the OSI model. - ETSU Outcomes 3b, IT-2; ABET Outcomes i, IT-l
- Demonstrate the operation of selected applications and hardware devices for operating networks. - ETSU Outcomes 3b, IT-2; ABET Outcomes i, IT-l
- Use network utilities like protocol analyzers to illustrate the stages of network operations. - ETSU Outcomes 3b, IT-2; ABET Outcomes i, IT-l

Major Topics:
Overview of networking: The notion of a service, The notion of a protocol, Common conceptual models of network operation.
Introduction to OSI/Internet models of network operation.
Network operation, as depicted by the OSI model: Application layer: http, ftp, telnet, and DNS., Presentation layer: translation, compression and encryption, Session layer: sockets and remote procedure calls.

Transport layer: connection-oriented services (TCP), connectionless services (UDP).

Network layer: the IP protocol: addressing, routing, network layer hardware devices

Data link layer: managing LANs, data link sublayers: access control: medium access control (MAC), addressing: logical link control (LLC)

Hardware devices, protocols, flow control and error control

Standards: Ethernet.

Physical layer: networking media and common protocols Introduction to wireless networking concepts.