Course Information Form (CIF)

Course Code: CSC 150

Course Title: Wireless Networking and Emerging Technologies

Department: Business/Computer Science and Technologies
Effective Date: Summer 2026
PCS Code: 1.2 - Occupational/Technical Instruction
CIP Code: 11.0901
Repeatability: 0

Credit Hours

Catalog Notation: 2-2-3
Credit Hour Distribution:

Lecture: 2	Lab: 2	Clinical: 0	**Total: 3**

General Course Information

Catalog Description

Provide a broad survey of wireless communications including in-depth coverage of protocols, transmission methods, and IEEE wireless standards.

General Course Objectives

After completing the course, the student will be able to site survey, design, and install simple wireless networks according to current standards. The student will understand the underlying theory of wireless networking operation.

Minimum Placement Levels

English	Reading	Math
None	None	None

Prerequisites

Credit in CSC 130 or equivalent experience

Methods of Evaluation

4 objective exams, 5-6 graded laboratory projects, and 1 final exam.

Instructional Materials and Additional Supplies

Guide to Wireless Communications, 4th Edition. 978-1-305-95853-1

Course Content

General Learning Outcomes (GLOs)

- Critical Thinking and Information Literacy: Students will demonstrate the ability to evaluate perspectives, evidence, and implications, and to locate, assess, and use information effectively.
- Technology: Students will demonstrate the ability to evaluate, select, and appropriately use current and emerging tools.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Introduction to Wireless Communications	1. Describe the various types of wireless communications technologies used today. 2. Discuss some trends in wireless data communications. 3. Discuss the advantages and challenges of wireless communications technology.	2.5	2.5	0
Wireless Data Transmission	1. Discuss the two types of a wireless transmission. 2. Explain the properties of a wave, such as amplitude, wavelength, frequency, and phase. 3. Review the basic concepts and techniques related to the transmission of data by radio waves. 4. Describe spread spectrum transmissions.	2.5	2.5	0
Radio Frequency Communications	1. Describe the basic components of a radio system. 2. Describe the factors that affect the design of a radio system. 3. Discuss why standards are beneficial and list the major telecommunications standards organizations. 4. Explain the radio frequency spectrum.	2.5	2.5	0
How Antennas Work	1. Describe decibels, gain, and loss. 2. Explain the purpose of an antenna. 3. Describe different antenna types, shapes, sizes, and applications. 4. Explain RF signal strength and direction. 5. Describe how antennas work.	2.5	2.5	0
Wireless Personal Area Networks	1. Describe a wireless personal area network (WPAN). 2. Discuss the IEEE 802.15 WPAN standards and their applications. 3. Explain how Bluetooth and ZigBee RF WPANs work. 4. Describe some of the security features and threats in WPAN technologies.	2.5	2.5	0
Introduction to Wi-Fi WLANs	1. Summarize the components of a WLAN. 2. Describe the modes of operation of a WLAN. 3. Discuss the first IEEE WLAN standards. 4. Describe coordinating communications in RF WLANs. 5. Explain the process of association and re-association. 6. Identify the power management features of IEEE 802.11 networks. 7. Discuss 802.11 MAC frame formats.	2.5	2.5	0
Enhancing WLAN Performance	1. Explain how IEEE 802.11g enhances 802.11b networks. 2. Describe how IEEE 802.11a works and how it differs from 802.11 networks. 3. Discuss IEEE 802.11n and how it functions in both the 2.4 GHz and 5 GHz bands. 4. Describe the IEEE 802.11ac and 802.11ad amendments. 5. Explain other important current and future amendments to 802.11.	2.5	2.5	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Expanding WLANs and WLAN Security	1. Discuss how wireless bridges and repeaters can expand the functionality of WLANs. 2. Describe how wireless controllers can simplify management of WLANs. 3. Identify WLAN design considerations. 4. Discuss how Wi-Fi Direct can make it easier for end users to share resources, synchronize devices, and connect directly. 5. Describe developments in the use of WLANs in multimedia distribution. 6. Discuss the security features and challenges of IEEE 802.11 networks, and how to manage them.	2.5	2.5	0
Wireless Metropolitan Area Networks	1. Describe wireless metropolitan area networks (WMANs) and explain why they are needed. 2. Describe various land-based fixed broadband wireless technologies, including Free Space Optics (FSO), microwave, and WiMAX. 3. Explain IEEE 802.16 (WiMAX) standards, applications, and protocols. 4. Discuss the security features of WMANs.	2.5	2.5	0
Wireless Wide Area Networks	1. Explain the basic concepts of cellular telephony and how it works. 2. Discuss the various generations and evolution of cellular telephony. 3. Discuss satellites and their application in WWANs.	2.5	2.5	0
Radio Frequency Identification and Near-Field Communication	1. Discuss radio frequency identification (RFID) and near field communication (NFC). 2. Explain the components of an RFID or NFC system. 3. Describe how RFID and NFC work. 4. Explain the challenges and security considerations of RFID and NFC.	2.5	2.5	0
Wireless Communications Everywhere	1. Describe the Internet of Things (IoT). 2. Explain the relationship of the IoT to wireless technologies. 3. Describe current applications of wireless technologies. 4. Identify future applications of wireless technologies.	2.5	2.5	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	30	0