

Intensive Wireless Communications

A Live, Virtual Course Series from the IEEE Communications Society

Invest in your team's career development and provide the in-depth training they need to stay current in the latest technology with the course series on Intensive Wireless Communications, developed by the IEEE Communications Society.

This live, virtual training includes 21 hours on the following topics:

- Fundamentals of Wireless Communication
- Network and Service Architecture
- Cellular Networks
- Non-Cellular Wireless Systems

Through this highly interactive training, learners connect with industry expert instructors for real-time answers to live questions.

Upon completion, learners will understand:

- Concepts of wireless system architecture, modulation, and data rate limits
- Routing of internet data packets, the constituents of the packet header, IP addresses and the differences between IP versions IPv4 and IPv6
- The differences between types of telecommunication industry documentation and how they influence characteristics and quality of products and services
- Wi-Fi network architecture and the evolution of device and system capabilities through specification amendments; Wi-Fi Security
- Integration of devices within the Internet of Things

Learners at your organization can choose to take all or any of the four courses in this series. Upon completion of these courses are Continuing Education Units (CEU) and digital certificates of participation. In addition, participants who complete all four courses in the series term qualify for a digital badge.

Who Should Attend:

The course series is good for someone with an engineering background and wants to learn more about wireless communications overall. The course is also appropriate for those who have a wireless background but would like a review of the overall concepts and technologies, and those who need to understand wireless technologies in the automotive industry.

Learn more about this program and other IEEE Continuing Education Resources

Visit <https://forms1.ieee.org/Intensive-Wireless-Communications-Course-Series-for-Org.html>



Quick Facts

Develop the skills and knowledge your team needs to succeed in wireless communications

A four-course program developed by experts in their field

Printable individual CEU certificates upon the successful completion of the program

Train multiple users at your organization in a consistent way—tiered pricing is available.

2023 Virtual Course Dates:

March- April 2023 Session

Fundamentals of Wireless

Communication: 22-23 March

Network and Service Architecture: 29-30 March

Cellular Networks: 12-13 April

Non-cellular Wireless Systems Cellular Networks: 19 April

September-October 2023 Session

Fundamentals of Wireless

Communication: 13-14 September

Network and Service Architecture: 20-21 September

Cellular Networks: 4-5 October

Non-cellular Wireless Systems Cellular Networks: 11 October

2023 Corporate Pricing (minimum requirement 3 learners):

3 learners: \$998 per learner

5-10 learners: \$799 per learner

10-25 learners: \$499.50 per learner

25+ learners please contact iwc-mktg@ieee.org for a customized quotation & additional savings.

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Topics Include:

Fundamentals of Wireless Communications

This course reviews topics of radio theory, which is essential for understanding specific applications of wireless communication including short-range wireless systems, cellular access networks, and satellite communication. First, the instructor explains basic concepts of wireless communication, including system architecture, modulation, Shannon capacity and the electromagnetic spectrum. Then various aspects of antennas, including directivity and gain; beamforming; and antenna types, are described. A section on wave propagation covers path loss and fading, the link budget, and propagation models. Transmitters and receiver architectures are described followed by explanations of filters, sensitivity, and distortion. The course concludes with a discussion of access methods for wireless networks and explanation of OFDM (orthogonal frequency division multiplexing technology).

22-23 March 2023, 10:00 am - 1:30 pm EDT each day

Network and Service Architecture

This course presents a comprehensive overview of telecommunication networks. The instructor begins with a review of internet protocol (IP) principles as they apply to communications networks, including those that have wireless access terminals. Then the IP core network is discussed in conjunction with cellular network evolution from circuit switched to packet switched all-IP core network architectures. Technologies for QoS (quality of service) support and VoIP (voice over IP) transport are reviewed as well as network security. Physical infrastructure characteristics are also examined. The course concludes with a discussion of types of engineering documentation.

29-30 March 2023, 9:00 am - 12:30 pm EDT each day

Cellular Networks

This course provides a comprehensive overview of the evolution and operational principles of digital cellular networks. The cellular concept is described and frequency reuse and sectorization are explained. You will learn about second generation networks CDMA and GSM through third generation CDMA2000 and WCDMA, which are succeeded by 4G LTE (Long Term Evolution) and 5G NR (New Radio). The principles of security are covered as they apply to cellular communication while showing the improvements implemented through the generations.

12-13 April 2023, 9:00 am - 12:30 pm EDT each day

Non-cellular Wireless Systems

This course focuses on non-cellular wireless systems. Wireless local area networks—most notably Wi-Fi—are studied along with their security features. Wireless personal area networks including Bluetooth (both legacy and low energy), Ultra-Wideband (UWB) and RFID are also covered. Additionally, ad hoc networks, including mesh networks and wireless sensor networks, and Internet of Things (IoT) features are examined. The course concludes with a look at architecture and features of satellite communication, along with an overview of wireless positioning and location techniques.

19 April 2023 10:00 am - 2:00 pm EDT

For more information on the course outline, instructors, and available dates, please visit <https://forms1.ieee.org/Intensive-Wireless-Communications-Course-Series-for-Org.html>.

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