



Fundamentals of OFDM And Wireless Communications

❖ Course Objectives

- To discuss the basics of wireless communications.
- To discuss the basics of computer networks.
- To study the basics of multicarrier concepts.
- To study the basics of OFDM concepts.
- To simulate OFDM concepts.
- To implement OFDM concepts.

❖ Type of Delivery

Instructor-Led Training

❖ Duration

5 Weeks – 3 Sessions per week
3 hours/ Session

❖ Training Benefits

- Professional Instructor
- Professional Presentations
- Software Simulation
- Software Emulation
- Exam & Final Project
- CEUs certificate for Professional Engineers
- Special discount for IEEE members
- Internationally recognized certificate

❖ **A few of the covered topics are**

- Wireless Communications
- History of Wireless Communications
- Current Wireless Systems
- Cellular Telephone Systems
- Paging Systems
- Satellite Networks
- Bluetooth
- Spectrum Allocations for Existing Systems
- Wireless Communications Evolution
- First generation
- Second generation
- Second Generation Enhancement
- Third Generation
- Wireless 4G Systems
- OFDM Basics
- Multicarrier (MC)
- MC Concept
- MC Approach
- Theoretical Implementation of OFDM
- IFFT
- Multi Orthogonal Carriers
- Practical Implementation of OFDM
- OFDM Physical Layer
- OFDM Simulation
- Transmitter Block Diagram
- Digital Data Input
- OFDM Modulation
- Receiver Block Diagram
- Introduction to VHDL Language
- Field Programmable Gate Array
- OFDM Implemented System



Please refer to course catalogue to see full covered topics.

❖ Target Audiences

This course is Suitable for Communications Engineering students at level 3 and 4 and newly admitted engineers. It is suitable also for Computer Engineering students at level 3 or 4 or newly admitted engineers.

❖ Prerequisites

- Analog Communications.
- Digital Communications.
- Basics of Computer Networks.
- Matlab Fundamentals

❖ Course certification

Upon successfully completing course assessment, quizzes, final project and exam, you will be eligible to get your internationally recognized certificate. This course is offering CEUs from IEEE and IACET for more information: www.ieee.org/partners

❖ About the Instructor

This course is delivered by **Dr. Mohamed Abdel Azim**. He is currently an assistance professor at Mansoura University. He has wide experience of teaching Electronics and Communications Engineering courses in various Universities in Egypt.

<http://mansvu.mans.edu.eg/cv/en/showcv.php?id=5063>

❖ Course References

- Andrea Goldsmith, “WIRELESS COMMUNICATIONS,” 2005 by Cambridge University Press.
- Ahmed R.S. Bahai and Burton R. Saltzberg, “Multicarrier Digital Communications Theory and Applications of OFDM,” Prentice Hall, 2009.
- Mohammad Azizul Hasan “Performance Evaluation of WiMAX/IEEE 802.16 OFDM Physical Layer,” 2007.