

Fundamentals of Microwave Radio

COURSE TOPICS:

- Electromagnetic Spectrum and Radio Waves
- Licensed and Unlicensed Frequencies and FCC Regulation
- RF Spectrum
- Decibels and Measurement – Power Output and Receive Sensitivity
- Carrier and Modulation
- Bandwidth and Capacity
- TDM and IP and Ethernet
- North American Digital Hierarchy
- Plesiochronous Digital Hierarchy
- Ethernet
- Microwave Hardware Configurations
- Point-to-Point and Point-to-Multipoint
- Architecture – Indoor and Split Mount
- Antenna Systems, Coaxial Cable, Waveguides
- Examples of a radio shelter, racks, microwave tower, and antenna system
- Microwave Frequency and Propagation
- Microwave Frequency Bands and Characteristics
- Polarization
- Propagation: free space loss, absorption, refraction, scattering, reflection, diffraction
- Fresnel Zones, LOS, non-LOS
- BER, AGC, System Gain, Fade Margins
- Link Budgeting
- Network Topologies, Protection, and Diversity
- Topologies Overview: star, chain, mesh, ring, spur
- Access, Backhaul, Transport
- Hot Standby (1+1 versus 1+0 versus 1+n)
- Route Diversity
 - TDM Ring Protection
 - Ethernet Ring Protection
- Space Diversity

* Note – Course material subject to change.

Overview:

The Fundamentals for Microwave Radio is an introductory course designed for those who are new to microwave radio communications. This course is conducted by certified Microwave Network instructor with extensive practical field experience.

Objective:

Understand basic concepts of microwave radio operations, essential parts of microwave radio systems and microwave communications applications

Prerequisites:

Entry level course, student should have basic understanding of radio communications and data networking.