

# MICROWAVE PATH DESIGN

Comsearch eLearning Center Online Training Course

Get certified, learn a valuable skill, connect with experts

## COURSE SYNOPSIS

You will take part in a comprehensive microwave design certification course developed in collaboration with George Kizer, a pioneer and subject matter expert in the field of microwave design and author of Digital Microwave Communication. George takes you through the most important aspects in microwave path engineering and design, with a mix of both theory and real world examples.

Learning doesn't stop with the online course. Comsearch's microwave design user forum connects you with experts, other students and valuable information to reinforce design concepts and answer your questions. Access to the forum is provided once you have registered.

## PRE-REQUISITE EXPERIENCE

No pre-requisite experience is required to take this course but as the subjects covered are technical, having prior knowledge of microwave is advantageous.

## DURING THE COURSE, STUDENTS WILL:

- Learn about the components of a microwave path
- Compare transmission, data rates, coding and modulation
- Look at alternative radio configurations, benefits and drawbacks
- Discover how modulation and ACM switching can maintain a link even in adverse conditions
- Explore the typical choices of transmission lines and differences between them
- Identify the differences in antenna types and their performance
- Explore UTC standards, ETSI recommendations and FCC regulations
- Understand the theory of propagation, Fresnel zones and how terrain and obstacles can impact the quality of transmission
- Describe K factor and how atmospheric conditions affect propagation
- Learn about the effects of fading, including causes and remedies
- Understand losses as a result of reflection, absorption and diffraction



- Understand path reliability and the impact of various climatic conditions
- Learn about rain outage and associated models
- Understand LOS surveys and why they should be completed
- Evaluate network topologies and redundancy methods
- Understand the typical path design process
- Learn about interference concepts and how to minimize the effects to microwave systems
- Understand frequency planning and licensing

### LESSONS COVERED

- Microwave basics
- Performance objectives
- Data transport choices
- Radio configuration
- Radio system components
- Antennas and antenna structures
- Antenna standards
- Propagation
- Planning and design
- Frequency planning considerations
- Primary path design tasks
- Optimizing path loss
- Completing the network design
- Additional path considerations

### HOW WILL I LEARN?

You will study this course online in a self-paced format. The course is made up of a number of web-cast lessons and online multiple choice assessments giving immediate feedback. The course content is supplemented by an interactive user forum containing videos and information on design concepts as well as access to experts to get your questions answered.

### SUCCESSFUL COMPLETION WILL REQUIRE

A minimum of 70% on the cumulative overall assessment score.

NOTE: Syllabus is subject to change.



Customer Support Center  
From North America Telephone: 800.318.1234  
International Telephone: +1.703.726.5500  
Fax: +1.703.726.5600

19700 Janelia Farm Blvd.  
Ashburn, VA 20147 USA  
[comsearch.com/training](http://comsearch.com/training)