



# Microwave 101 Syllabus

## Comsearch In-house Training Course

### ABOUT THE COURSE

Microwave 101 is designed to provide an introductory level foundation with a mixture of both theory and real world examples. Learn through basic theory, case studies, field demonstrations and course examples.

There are NO COURSE PREREQUISITES.

### COURSE DATE / TIME

May 6<sup>th</sup> or 7<sup>th</sup>, 2020  
9am - 4pm

### COURSE LOCATION

Comsearch, A CommScope Company,  
19700 Janelia Farm Boulevard,  
Ashburn, VA 20147

### OBJECTIVE

By the end of this course, you will understand:

1. Basic elements of a microwave path
2. How propagation affects the design
3. Practical factors that influence good path design
4. Regulatory considerations

### SECTIONS WILL INCLUDE

#### SAS & AFC: New Ways to Share Spectrum

The 3.5 GHz Citizens Broadband Radio Service (CBRS) introduced the Spectrum Access System (SAS) concept and the Automatic Frequency Coordination (AFC) approach to dynamic sharing is being considered to allow unlicensed devices access to the 6 GHz band.

Topics will include:

- Background to CBRS and Unlicensed in 6 GHz
- Update on CBRS and how to prepare for transition from Pt. 90 to Pt. 96
- What is the SAS and how does it work
- Current proposal to open 6 GHz for unlicensed devices
- What's an AFC and what does it mean for FS microwave systems

## Microwave Components

- Radios
- Transmission Lines
- Antennas

## RF Propagation

- Free space path loss
- Fresnel zones
- K Factor
- LOS path clearance
- Fading

## Path Reliability

- Factors that affect reliability
- What is an outage?
- Fade margin
- Space diversity
- Effects of environmental factors

## Path Design Considerations

- Frequency options
- Licensed timelines
- Components
- EIRP limits
- Quiet zones
- Geo satellite orbit
- Tower registrations

## Comsearch Connect

- Project Tracker
- Protection
- Path Database
- Data Products

## Path Survey

- Survey planning
- Site survey
- Path profile verification

## Interference Analysis

- Interference impact
- C/I calculation

## Frequency Planning

- High / low plans
- Frequency plan conflicts (Bucking)
- Interference resolution methods
- Prior Coordination Procedure
- Interference protection

## FCC Licensing

- FCC application filing
- Completion of construction
- License management
- Regulatory updates

NOTE: Syllabus is subject to change.



For more information, contact **Comsearch Customer Support**:  
Tel: 1 800 318 1234 | Email: [customersupport@comsearch.com](mailto:customersupport@comsearch.com)

Register at [comsearch.com/microwave-101](https://comsearch.com/microwave-101)

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