



# iBwave TRAINING COURSE SYLLABUS

## COURSE: IN-BUILDING FUNDAMENTALS

Note: Course syllabus is subject to change

### NO COURSE PREREQUISITES

(Training to be completed through the Learning Center)

- ➔ Learn through videos
- ➔ Learn through narrated slide shows
- ➔ Complete final exam

### INTRODUCTION TO IN-BUILDING FUNDAMENTALS

- ✓ Course Learning Objectives
- ✓ Course Outline
- ✓ About iBwave

### MOBILE NETWORKS EVOLUTION

- ✓ First Generation
- ✓ Second Generation
- ✓ Third Generation
- ✓ Fourth Generation
- ✓ Fifth Generation

### MOBILE NETWORKS ARCHITECTURE

- ✓ Macro Network Topology
- ✓ RF Sources
- ✓ In-Building Components
- ✓ Distributed Antenna Systems (DAS)
- ✓ Network Management

### IN-BUILDING RF CONSIDERATIONS

- ✓ Electromagnetic Principles
- ✓ Uniform Plane Wave
- ✓ Material Effects and Characteristics
- ✓ Propagation Mechanisms for In-Building Environments
- ✓ Propagation Challenges and Predictions

### RADIO WAVE PROPAGATION BASICS

- ✓ Macro Network Topology
- ✓ RF Sources
- ✓ In-Building Components
- ✓ Distributed Antenna Systems (DAS)
- ✓ Network Management

### IN-BUILDING DAS DESIGN PROJECT STRATEGY

- ✓ Business Models and Life Cycle
- ✓ Deployment Process
- ✓ Challenges

### SMALL CELLS

- ✓ Technology Overview
  - Small Cell Technologies
  - Radio Technologies for Small Cells
  - Wi-Fi Technologies for Small Cells
  - Small Cell Network Connectivity
- ✓ Deployment Process Overview
  - Typical Small Cell Deployment Process
  - One Site Visit

### WI-FI

- ✓ Wi-Fi Basics
- ✓ Radio Issues
- ✓ Network Issues
- ✓ Dimensioning (Radio & Network)
- ✓ Managing the Wi-Fi Radio Environment

### TECHNOLOGY CONSIDERATIONS

- ✓ CDMA
- ✓ GSM
- ✓ UMTS
- ✓ HSPA
- ✓ LTE
- ✓ KPIs and Target Design Values

### BRINGING IT ALL TOGETHER

- ✓ Review
- ✓ Design a Project from Scratch
- ✓ Conclusion

### EXAM

**(90 minutes)**