



Antennas and Propagation for Wireless Communications Systems

Course Code: RF2-ON Duration: 3 Days Course Level: Intermediate

Course Overview

Antennas and electromagnetic wave propagation form the basis of all radio communications systems and have a strong influence on overall system performance in terms of robustness and quality. This 3-day intermediate-level course provides a solid grounding in the basic concepts and application of electromagnetic waves, propagation and antennas to a variety of radio frequency (RF), wireless and microwave communications systems. Terrestrial and satellite radio systems are covered, both in fixed and mobile contexts. Throughout the course a variety of real-world, practical antennas and antenna array implementations are discussed.

Who Will Benefit?

The course is aimed at engineers, technicians and engineering managers involved in the design, development and application of RF, wireless and microwave communications systems who wish to develop their knowledge and understanding of antennas and propagation. Delegates typically include RF and Microwave Engineers, RF Systems Engineers and RF Field Applications Engineers.

Learning Outcomes

Upon completion of this course, participants will be able to:

- ◆ Understand the basic concepts of electromagnetic waves and propagation
- ◆ Explain the basic concepts common to all antennas and arrays
- ◆ Select the most appropriate antenna for a given application
- ◆ Understand the factors affecting the design of antenna systems
- ◆ Apply commonly used antenna measurement techniques

Business Benefits

The course will deliver the following business benefits:

- ◆ Reduced design and development times and costs
- ◆ Improved design and development efficiency
- ◆ Improved design quality and system performance
- ◆ Reduced development and project risks

Course Programme

The course content covers:

- ◆ Basic electromagnetic wave theory
- ◆ Propagation in free space in the various frequency bands
- ◆ Propagation effects: Direct, sky and ground waves
- ◆ Interaction of waves with obstacles: Diffraction and scattering
- ◆ Fading mechanisms
- ◆ Basic concepts in antenna theory
- ◆ Antenna types including dipole, loop, patch, horn, dish and helical
- ◆ Reactive and radiating near-field (Fresnel region)
- ◆ Far-field (Fraunhofer region) and Friis transmission equation
- ◆ Antenna arrays and array factors (uniform, binomial etc.)
- ◆ Sidelobes, nulls, beam broadening and beam steering
- ◆ Antenna measurement techniques for anechoic chambers

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Instructor

Detailed information about the course instructor is available on request.

Prerequisites

Participants would normally be qualified to degree level or equivalent in an electronic engineering, physics or mathematics-related subject. They should also have a basic understanding of electronics, RF and microwave technology.

Course Level

Intermediate: Assumes the delegate has general knowledge of the subject and professional experience of the specific areas covered.

Course Venue

Delivered on-site either at customer premises or at any suitable venue throughout the UK, Europe and Rest of the World.

Dates

Flexible according to your requirements.

Course Fees

Please call us on +44 (0)1962 855 730 to request a quote.

What's Included?

Course participants will each receive a set of high-quality bound course notes printed in full colour and a Certificate of Attendance.

Customisation

For on-site courses, we do not force your organisation to adopt a standard, 'one-size-fits-all' training programme. The standard course programme can be adapted both in content and duration according to your exact requirements and specifications. Our technical experts will assist you in identifying these, even if they are uncertain or unclear. The course programme is then fitted to your exact requirements. Please call us on +44(0)1962 855 730 to discuss your requirements in more detail.

Related Courses

Related courses include Practical RF and Microwave Measurements (RF3), Practical Design of Wireless Digital Communications Systems (RF4), PCB Design for RF and High-Speed Applications (RF5) and RF and Microwave Power Amplifier Design (RF6).

Terms and Conditions

We encourage you to read our Terms and Conditions, which cover important issues like payment and cancellation policies. Our Terms and Conditions can be found on our website.

Further Information

For further information about this course, please call us on +44 (0)1962 855 730.



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