

## SKU-Antenna and Wave Propagation

SKU-Antenna & Wave propagation explains antenna & wave concepts in a manner that is clear, interesting, and easier to understand through innovative techniques. The course is developed as a self-study package with easy understanding of the topics covering all the topics, explaining difficult antenna concepts with Flash animations, Virtual Labs. It also include Faqs, Mcqs, & Assignment question at the end of each Unit

Scientech Knowledge Universe
www.sku.bz

### Interactive Example on Antenna Array of Two Infinitesimal elements ( $d = \lambda/2$ and $\alpha = \pi/2$ )

- Horizontal Plane Pattern
- Vertical Plane Pattern
- 3D Element/Unit Pattern
- 3D Group Pattern
- 3D Resultant Pattern

### Topics covered in SKU-Antenna & Wave Propagation:

#### Antenna Basics

**Topics Covered:** Introduction, Transmitting & Receiving Antenna, Antenna Fields Antenna as a Terminated Device, Types of Antenna.

#### Antenna Parameters

**Topics Covered:** Radiation Pattern, Power Pattern, Pattern Beamwidth, Effective Length, Effective Aperture, Input Impedance, Radiation Resistance, Radiation Intensity, Beam Solid

Angle, Directivity, Antenna gain, Antenna efficiency and antenna losses, Frequency Bandwidth, Antenna Temperature, Antenna Polarization

### Linear Wire Antenna

**Topics Covered:** Electric and magnetic field components, Radiation and Power Pattern, Effective Length and Effective Aperture, Radiation Resistance and Radiated Power, Beam solid angle and Directivity, Polarization, Linear Dipole, Current Distribution, Electric and magnetic field components, Radiation and Power Pattern, Radiation Resistance and Radiated Power, Effective Length and Effective Aperture, Polarization

### Antenna Array

**Topics Covered:** Two Element Antenna Array, Resultant Radiation Pattern, Directivity, N Element Antenna Array, Resultant Radiation Pattern, Broadside Array, Ordinary End-fire Array, Hansen-Wood yard End-fire Array, Directivity, Planar Array, Array Factor, Beamwidth, Directivity

### Special Type of Antenna

**Topics Covered:** Broad Band Antenna, Helical antenna, YAGI-UDA, Frequency Independent Antenna, LPDA, Aperture Antenna, Rectangular Horn, Pyramidal Horn, Circular Horn, Reflector Antenna, Plane Reflector, Corner Reflector, Parabolic Reflector, Microstrip Antenna, Loop antenna, Small circular loop, Electric and magnetic field components, Radiation Resistance and Radiated Power, Radiation Intensity and Directivity, Equivalent Circuit, Circular loop of constant current, Electric and magnetic field components, Radiation Resistance and Radiated Power, Radiation Intensity and Directivity, Polygonal Loop antenna, Square Loop, Triangular Loop, Rectangular Loop

### Antenna Measurement Parameter

**Topics Covered:** Far-field pattern measurement, Gain measurement, Directivity measurement, Impedance measurement, Current measurement, Polarization measurement

### Introduction to Wave Propagation

**Topics Covered:** Introduction, Radio-frequency spectrum, RF Propagation in Free space, Propagation Loss, Different Modes of Wave Propagation, Surface Wave, Propagation Mechanism, Losses, Range, Field strength, Applications, Space Wave, Propagation Mechanism, Range, Effect of Refraction in Troposphere, Field Strength, Applications, Different layers of Atmosphere, Refractive Index of Ionosphere and Propagation Mechanism, Effect of Earth Magnetic Field, Angle of Incidence and Critical Angle, Critical Frequency, Maximum Usable Frequency (MUF), Lowest Usable Frequency (LUF) and Optimum Working Frequency, Applications

### Different Types of Propagation

**Topics Covered:** Tropospheric Scatter Propagation, Blob Theory, Turbulence Layer Theory, Duct propagation, Duct Formation, Different types of Duct, Variations in the Ionosphere, Regular variation, Sunspots, Irregular Variation, Sporadic E, Sudden Ionospheric Disturbances(SID), Ionospheric Storms

**Print Shots of SKU-Antenna and Wave Propagation:**

