

# **AMET-26-I RADAR ENGINEERING**

## **1. AN INTRODUCTION TO RADAR**

Basic Radar , The Simple Form of the Radar Equation, Radar Block Diagram, Radar Frequencies, Application of Radar, The Origins of Radar

## **2. THE RADAR EQUATION**

Introduction, Detection of Signals in Noise, Receiver Noise and the Signal-to-Noise Ratio, Probability Density Functions, Probabilities of Detection and False Alarm, Integration of Radar Pulses, Radar Cross-Section Fluctuations, Transmitter Power, Pulse Repetition Frequency, Antenna Parameters, System Losses, Other Radar Equation Considerations

## **3. MTI AND PULSE DOPPLER RADAR**

Introduction to Doppler and MTI Radar, Delay-Line Cancelers, Staggered Pulse Repetition Frequencies, Doppler Filter Banks, Digital MTI Processing, Moving Target Detector, Limitations to MTI Performance, MTI from a Moving Platform (AMTI), Pulse Doppler Radar, Other Doppler Radar Topics

## **4. TRACKING RADAR**

Tracking with Radar, Monopulse Tracking, Conical Scan and sequential Lobing, Limitations to Tracking Accuracy, Low-Angle Tracking, Tracking in Range, Other Tracking Radar Topics, Comparison of Trackers, Automatic Tracking with Surveillance Radars (ADT)

## **5. DETECTION OF SIGNALS IN NOISE**

Introduction, Matched-Filter Receiver, Detection Criteria, Detectors, Automatic Detection, Integrators, Constant-False-Alarm Rate Receivers, The Radar Operator, Signal Management

## **6. INFORMATION FROM RADAR SIGNALS**

Introduction, Basic Radar Measurements, Theoretical Accuracy of Radar Measurements, Ambiguity Diagram, Pulse Compression, Target Recognition