AMET 26 RADAR ENGINEERING

UNIT-1 AN INTRODUCTION TO RADAR

1.1 Basic Radar , The Simple Form of the Radar Equation,

1.2 Radar Block Diagram, Radar Frequencies,

1.3 Application of Radar, The Origins of Radar

UNIT-2 THE RADAR EQUATION

2.1 Detection of Signals in Noise, Receiver Noise and the Signal-to-Noise Ratio,

2.2 Probability Density Functions, Probabilities of Detection and False Alarm,

2.3 Integration of Radar Pulses, Radar Cross-Section Fluctuations,

2.4 Transmitter Power, Pulse Repetition Frequency,

2.5 Antenna Parameters, System Losses,

2.6 Other Radar Equation Considerations

UNIT-3 MTI AND PULSE DOPPLER RADAR

3.1 Doppler and MTI Radar, Delay-Line Cancelers,

3.2 Staggered Pulse Repetition Frequencies, Doppler Filter Banks, Digital MTI Processing,

3.3 Moving Target Detector, Limitations to MTI Performance,

3.4 MTI from a Moving Platform (AMTI), Pulse Doppler Radar, Other Doppler Radar Topics

UNIT-4 TRACKING RADAR

4.1 Tracking with Radar, Monopulse Tracking,

4.2 Conicla Scan and sequential Lobing,

4.3 Limitations to Tracking Accuracy, Low-Anle Tracking,

4.4 Tracking in Range, Other Tracking Radar Topics,

4.5 Comparison of Trackers,

4.6 Automatic Tracking with Surveillance Radars (ADT)

UNIT-5 DETECTION OF SIGNALS IN NOISE

5.1 Matched-Filter Receiver, Detection Criteria, Detectors,

5.2 Automatic Detection, Integrators, Constant-False-Alarm Rate Receivers,

5.3 The Radar Operator, Signal Management

UNIT-6 INFORMATION FROM RADAR SIGNALS

6.1 Basic Radar Measurements, Theoretical Accuracy of Radar Measurements,

6.2 Ambiguity Diagram, Pulse Compression, Target Recognition

Reference Books:

1. Waveform Design and Diversity for Advanced Radar Systems (Electromagnetics and Radar)" by Fulvio Gini and Antonio de Maio
2. Advanced Radar Techniques and Systems" by Gaspare Galati