EE 596 Independent Study

Basic Radar Analysis

Instructor	Ram Narayanan (rmn12@psu.edu)
Office	202 Electrical Engineering East
Office Hours	By Appointment

Required Text:

Basic Radar Analysis by – Mervin C Budge Jr. and Shawn R. German

Description:

This course will give exposure to the basics of Radar and the mathematics related to radar, as well as information related to radar loss, wave forms, and signal processing. This course will also involve independent research into radar analysis, to give a basic understanding of how radar works, and the current understanding of radar technologies. This course will be used for later research with Dr. Narayanan and other students.

Course Objectives:

- Develop a basic understanding of radar and their principles of operation.
- Understand the mathematics behind radar analysis.
- Learn more about the research process by finding and reading scholarly articles to support the required text.

Evaluation:

20% Paper 1: Summary of Chapters 1-3 and supplementary materials

20% Paper 2 Summary of Chapters 4-5 and supplementary materials

20% Paper 3: Summary of Chapters 6-7 and supplementary materials

20% Paper 4: Summary of Chapters 8-9 and supplementary materials

20% Paper 5: Final Summary

Week Assignment Due	Topic
January 22	Chapter 1: Radar Basics
January 29	Chapter 2: Radar Range Equation
February 5	Chapter 3: Radar Cross Section
February 12	Paper 1 Due
February 19	Chapter 4: Noise
February 26	Chapter 5: Radar Losses
March 5	Paper 2 Due
March 12	Chapter 6: Detection Theory
March 19	Chapter 7: Matched Filter
March 26	Paper 3 Due
April 2	Chapter 8: Detection Probability Improvement Techniques
April 9	Chapter 9: Ambiguity Function
April 16	Additional Research
April 23	Paper 4 Due
April 30	Writing the Final Paper
May 7	Final Paper Due

Student Signature:  Date: 01/14/2021

Instructor Signature: _____ Date: _____