

## ELEG 5743 - RADAR SYSTEMS

Spring Semester, 1996

Catalog Data: ELEG 5743. Radar Systems. Credit 3. Methods of discrimination and ambiguity in the measurement  
1995-96 at large, angle, and velocity. Analysis of search, tracking, MTI, SLAR and SAR systems. Characterization of return from complex targets. Prerequisite: ELEG 3713.

Textbook: Radar Principles, Nadav Levanon, Wiley, 1988.

Reference: Introduction to Radar Systems, M. I. Skelnic, McGraw-Hill, 1988.

Coordinator: W. P. Waite, Professor of Electrical Engineering

Goals: To introduce students to the theory and analysis of radar systems. Discrimination of range, angle and velocity the concepts of resolution, ambiguity, CFAR and RES.

Prerequisites by Topic:

1. Maxwell's equations.
2. Wave propagation.
3. Random signal analysis and noise.

Topics:

1. Measurements and the radar equation. (6 classes)
2. Radar cross Section (RCS). (6 classes)
3. Detection. (3 classes)
4. Multipath effects. (3 classes)
5. The matched filter. (3 classes)
6. Ambiguity functions. (6 classes)
7. Resolution and accuracy. (3 classes)
8. Moving-Target indicating. (MTI) (3 classes)
9. Constant false-alarm rate. (CFAR) (3 classes)
10. Synthetic aperture radar. (3 classes)
11. Monopulse. (3 classes)

Computer Usage:

Homework problems require computer usage for calculation and plotting.

Laboratory Projects:

None.

ABET category content as estimated by faculty member who prepared this course description:

Engineering Science:	1.5 credit or 50%.
Engineering Design:	1.5 credit or 50%.

\* Three 50 minute classes per week

Prepared By: \_\_\_\_\_ Date: \_\_\_\_\_