

EEE 5557 Principle of Modern Radar (Fall 2022)

The primary objective of this course is to introduce the radar concepts, technologies, challenges, and applications that address the increasingly complex operational environment. Lectures will be based on recent research activities, presentations, and publications to gain an understanding of recent radar capabilities and continual improvements to the technology, including the modern threat systems.

Military Radars Global Market Report 2022

<https://www.globenewswire.com/news-release/2022/02/28/2393062/0/en/Military-Radars-Global-Market-Report-2022.html>

The Worldwide Radar Systems Industry is Expected to Reach \$41 Billion by 2026

<https://www.prnewswire.com/news-releases/the-worldwide-radar-systems-industry-is-expected-to-reach-41-billion-by-2026-301504167.html>

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<https://ece.fiu.edu/people/faculty/profiles/seng-hong/index.html>

Office Hours: By appointment

Textbook: Although there is no textbook for this course, the class will focus on the recent technologies, with the primary objective to provide an understanding of radar concepts and gain some level of perspective on radar systems development and its applications.

Reference: Suggest references such as Intro to Radar Systems (Merrill Skolnik), Radar Systems (Paul Lynn), Antenna Theory & Design (Warren Stutzman/Gary Thiele), and relevant technical publications.

Course Content: Lectures include an overview of History of Radar, Radar Range Equation, RF Loss Budget Formulation, Radar Cross Section, Antenna Technologies, Transmitter/Receiver Devices, Frequency-Modulated Continuous Wave radar, Synthetic Aperture Radar, and Inverse Synthetic Aperture Radar will be discussed. If arrangement can be made, to invite speaker in presenting relevant research projects. In addition, the class will utilize "Interactive Learning" concept, such as discussions in class, Question & Answer during lecture, as well as interaction between students with homework assignment presentation.

Grading: Course grade is based upon attendance and participation, homework assignment and presentation, Midterm and Final Exam. Take home final exam to include "Technical Report" and will be weighted more heavily in the Final Exam.

The instructor reserves the right to change or modify syllabus at any time during the semester.