COURSE	Name	:	Radar Signal Processing
	Code	:	EE185532
	Credit(s)	:	2
	Semester	:	(Elective Course)

Description of Course

Radar Signal Processing is an elective course that discusses signal processing techniques on single and multiple radars, for the purpose of pulse compression and clutter suppression, optimization of feed current and array configuration on radar phased arrays, and waveform design on MIMO radars.

Learning Outcomes

Knowledge

(P01) Mastering the concepts and principles of science in a comprehensive manner, and to develop procedures and strategies needed for the analysis and design of systems related to the field of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics as a preparation for further education or professional career.

Specific Skill

(KK01) Being able to formulate engineering problems with new ideas for the development of technology in power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

General Skill

(KU05) Being able to take decisions in the context of solving problems of science and technology development that concerns and implements the humanities value based on analytical or experimental studies of information and data.

Attitude

(S09) Demonstrating attitude of responsibility on work in his/her field of expertise independently.

Course Learning Outcomes

Knowledge

Mastering the concepts of signal processing for radar.

Specific Skill

Able to do signal processing for radar.

General Skill

Able to do signal processing for radar based software (Matlab).

Attitude

Demonstrating attitude of being responsible for the work in the radar field independently.

Main Subjects

1. Radar concept
2. Thresholding
3. Pulse compression
4. Doppler processing
5. Tracking moving objects

6. Clutter emphasis
7. The concept of a radar phased array
8. Sparse Array
9. MIMO radar concept
10. Waveform Design

Reference(s)

[1] Mark Richards, James Scheer, William Holm, Principles of Modern Radar Volume I: Basic Principles, SciTech, 2010.
[2] William Melvin, James Scheer, Principles of Modern Radars Volume III: Advanced Techniques, SciTech, 2013.
[3] Wulf-Dieter Wirth, Radar Techniques Using Array Antennas, IEE, 2001.
[4] Jian Li, Petre Stoica, MIMO Radar Signal Processing, John Wiley & Sons, 2009.

Prerequisite(s)

- Random Process and Statistical Signal Processing
- Propagation and Radiation