

Total Credits: 03

Lecture / Recitation / Discussion Hours: (3-0)

Course Objective:

The objective of this advanced graduate-level course is to provide a comprehensive coverage of array signal processing concepts and techniques. To prepare the students to undertake research and development related to multidimensional signal processing techniques involving array of sensor transmitters.

Course Topics / Outline:

1. Signals in space and time.
2. Apertures and arrays.
3. Sampling of spatio-temporal signals.
4. Time-domain beam-forming.
5. Frequency-domain beam-forming.
6. Polyphase filtering.
7. Random transform.
8. Detection of spatio-temporal signals.
9. Signals parameters estimation.
10. Spectral estimation schemes.
11. Adaptive array processing.

Prerequisites:

1. EE-841 Advanced Digital Signal Processing. .
2. EE-842 Analysis of Stochastic System.

Textbook:

1. Array Signal Processing, Concepts and Techniques, Don H. Johnson and Dan E. Dudgeon. Prentice Hall, Latest Edition.

Supplementary Textbooks:

1. Sensor Array Signal Processing, Prabhakar, S Naidu.
2. Optimum Array Processing; Part-IV of Detection, Estimation and Modulation Theory, Harry L. Van Trees.