THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Stochastic Signal Processing

ECE 6202

Credit Hours:
3.00 - 3.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Spectrum estimation, array processing, and adaptive filtering.

Course Goals / Objectives:
- Apply filtering techniques to the design and analysis of sensor arrays
- Learn the foundations of adaptive filter theory: transient and steady-state behaviors of adaptive filtering algorithms
- Develop facility with MATLAB as a tool for explanatory analysis and algorithm implementation in statistical signal processing
- Apply vector space methods to stochastic signal processing problems
- Learn fundamental bounds on estimation performance, with application to harmonic retrieval

Course Topics:
- Review of random processes
- Classical methods for spectrum estimation
- Parametric techniques for spectrum estimation
- Filtering and prediction
- Harmonic retrieval and fundamental bounds
- Array processing
- LMS transient and steady-state behavior
- LMS extensions, least-squares solutions and gemoetric interpretations
- Recursive least squares: transient and steady-state behavior

Designation:
Elective