**Course Topics**

**EEE 506: Digital Spectral Analysis**

**Prerequisites:** EEE 350 (or equivalent) - basic knowledge in random signals

**Catalog Course Description:** Principles and applications of digital spectral analysis: estimation theory, least squares, random sequences, parametric, and nonparametric methods for spectral estimation as applied to spectral and spatial estimation

**Course Topics:**

Spectral and spatial analysis

Introduction to estimation theory (Cramer-Rao bound)

Deterministic spectral analysis

 Response of linear discrete systems to random inputs

 Sample spectrum autocorrelation estimates

 Periodograms

 Windowing

 AR, MA, and ARMA models,

 Yule-Walker equations,

 Eigenanalysis methods

 MuSiC algorithm

 The MVDR algorithm

 Calibration

 Random sampling

 Compressive sensing (compressed sampling)