

# Syllabus: SIO 241 Advanced Signal Processing

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## Course Description

Review basic fluid and elastic wave propagation in infinite and finite media. Introduce signal and array -processing methods for localization, medium inversion, and non -destructive testing based on the underwater, seismic, and radar literature.

## Topics

1. Background acoustics of simple structures for processing 'platform':
  - (a) String
  - (b) Membrane
  - (c) Rod
  - (d) Plate
2. Basic Array Processing
  - (a) Linear Beamforming
  - (b) Minimum Variance and White Noise Constraint
  - (c) Eigenvector techniques, *e.g.*, "MUSIC", Null Space Projections ...
3. Inversion, :Linear, nonlinear,sensitivity kernel
4. Off structure vibration: Radiation
5. Correlation based noise processing