

Syllabus: SIO 200A – OCEAN ACOUSTICS AND SIGNAL PROCESSING I
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Course Description: This is the first of a three-quarter sequence on ocean acoustics and signal processing. The material will cover basic ocean acoustics, computation modeling, signal processing and analysis of experimental data. The homework assignments will be a sequence of 10 mini- projects. The class meets three times a week plus there will be problem session/workshops. Prerequisites are General Physics with Calculus, Math through differential equations and linear algebra. Some knowledge of MATLAB is helpful.

This first quarter includes:

1. Introduction to the Ocean Acoustic Environment and Ambient Noise
2. Plane, cylindrical and spherical wave propagation
3. Reflection and Transmission Coefficients
4. Sonar Equation
5. Acoustic Wave Equation from the Equations of Hydromatics
6. Introduction to Propagation in Layered Media
7. Ray Theory
8. Spectral Theory of Sound Propagation
9. Introduction to Array Processing