Example of a Sonars and Ocean Acoustics Curriculum

1st Summer
Student project with WHOI and MIT advisers
"Survey" of oceanography subject
18.089 and/or WHOI short course. Review of Mathematics (no degree credit)

1st Fall semester (Subject #, level, # units, title)
6.431, G, 12, Probability
12.808, G, 12, Introduction to Observational Physical Oceanography
18.0851, G,12, Computational Science and Engineering I
2.THG, Thesis research

1st Spring semester
2.066, G, 12, Acoustics and Sensing
6.003, U, 12, Signals and Systems
18.0751, G, 12, Methods for Scientists and Engineers
2.THG, Thesis research

2nd Summer
2.THG, Thesis research

2nd Fall semester
2.681, G, 12, Environmental Ocean Acoustics
2.688, G, 12, Principles of Oceanographic Systems: Sensors and Measurements
6.341, G, 12, Discrete Time Signal Processing
6.456, G, 12, Array Processing (alternate year offerings)
2.THG, Thesis research

2nd Spring Semester
2.682, G, 12, Acoustical Oceanography
2.160, G, 12 Identification, Estimation and Learning
2.THG, Thesis research

3rd Summer
2.THG, Thesis research

Summary
12 Subjects /144 units
10 H credit /120 units
2 U credit /24 units
Thesis

Course summary: 1 PO/Met, 3 Ocean Acoustics, 2 Mathematics, 5 Mech. Engineering

Comments: This is heavily weighted towards the acoustics and signal processing needed for modern sonars such as the APB/ARCI system. It does satisfy all the MIT and WHOI requirements and is sequenced by fall/spring availability. Please see note above re every other year offerings of graduate subjects. Also, the subjects related to signal (time series) and systems can be advanced IF there is excellent undergraduate preparation in these areas.